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East Reservoir
Final Environmental Impact Statement

Kootenai National Forest
Libby Ranger District
Lincoln County, Montana

EAST RESERVOIR PROJECT

Final Environmental Impact Statement

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Chapter 4

Introduction

The East Reservoir Draft Environmental Impact Statement (DEIS) was released to the public for comment on June 14, 2013. The DEIS disclosed the analysis of effects related to the environmental impacts of three alternatives: no action (Alternative 1), the proposed action (Alternative 2), and an alternative that addressed concerns identified during the scoping of the proposed action (Alternative 3).

This Final Environmental Impact Statement (FEIS) displays the status of the analysis since the release of the DEIS. Chapter 4 discusses changes made to Alternative 2, the agency preferred alternative since receipt of public comments on the DEIS, and errata to the DEIS. Chapter 5 provides an update on public involvement activities, displays public comments on the DEIS and the agency responses, and finally a list of the recipients of this FEIS.

Changes between Draft and Final EIS

This chapter highlights and discusses several changes that have been made to Alternative 2 as a result of public comments (see Chapter 5) and further refinement by the East Reservoir Interdisciplinary Team (IDT). Factual corrections to the DEIS are included in this FEIS to reflect errors (see Errata Table 1 pages 4 through 26).

Between the draft EIS and FEIS for East Reservoir Project, the federal status of the wolverine changed from a candidate for listing under the Endangered Species Act to proposed for threatened status under ESA. On February 4, 2013 the USFWS published in the Federal Register a proposed rule to list the distinct population segment of the North American wolverine occurring in the contiguous United States, as a threatened species under the Endangered Species Act. On February 5, 2014 this ruling was extended for six months. The February 2013 proposed 4(d) rule listed several activities that were not considered significant threats to the species and would not result in incidental take and a violation of section 9 of the ESA. The USFWS identified no Forest Service management activities that threaten wolverines. The change in status did not affect the analysis conducted for the species under the East Reservoir Project therefore no additional consultation is necessary. The new determination, based solely on the change in status, for the wolverine, is that the East Reservoir project will not jeopardize the continued existence of the species.

Alternative 2 with Modifications

Alternative 2 with Modifications consists of the original Alternative 2 with some activities analyzed under Alternative 3 in order to respond to public concerns regarding loss of access by motorized vehicles and snowmobiles. The changes to Alternative 2 are minor, and it is sufficient and appropriate to file the DEIS (June 2013) with the FEIS (September 2013) as the final documentation for this project (40 CFR 1503.4(c)).

The activities incorporated from Alternative 3 discussed in the Draft EIS are as follows:

- Unit F19 which is adjacent to state land on the Koocanusa Reservoir near the mouth of Cripple Horse Creek was added during additional field reconnaissance and includes slashing and burning to address excess fuels. Analysis can be found in the DEIS, Chapter 3, page 177.
- Road #4904, in the Boundary Mountain area, will be changed from restricted yearlong to restricted seasonally (10/15 – 06/30) to give additional access to the trailhead for Trail #425. Open road density analysis regarding this change can be found in the DEIS, Chapter 3, page 224.
- The five motorized trails (279, 280, 420, 426, 500) will change from motorized to non-motorized for a total of about 27 miles to improve big game security. Trails 281 and 420 will remain as motorized trials creating a loop which incorporates open NFS roads. This has been analyzed in Alternative 3. The reason for changing the motorized routes to non-motorized was to increase big game security. The existing security is 28% which is below the recommendation of 30%. Security increases from 28% to 33.4% even while leaving the loop as motorized. Thus a balance of uses are achieved with big game security increased while leaving some opportunity for motorized recreation. Refer to the DEIS, Chapter

3, table 3.86 for more information.

- Two undetermined roads in the Canyon Bay area will be decommissioned to protect resource values at risk (Table 2.22). These are roads #5298 and 2598A (0.24 miles).
- A new non-motorized trail within the East Reservoir analysis area will be created as described in Alternative 3.This trail will increase an established recreation area along the Koocanusa Reservoir.

The changes made to Alternative 2 are within the scope and context of the environmental effects disclosed in the DEIS, Biological Assessments, Biological Evaluation, and supporting documentation located in the project file (PF).

ERRATA

The following are errors that were discovered after copies of the DEIS were printed. The changes were determined by the interdisciplinary team to be minor and will not change the conclusions presented in the DEIS. These corrections were reviewed by the deciding official prior to the decision documented in the Record of Decision.

Table 1 – DEIS Errata

LOCATION in DEIS	CORRECTION
S-3	In Table S.1, under Provide Amenities, Jobs and Products to the Communities; Timber Harvest Volume. CCF; Alternative 3 should be 67,987 rather than 7.782 that appear in the DEIS.
Chapter 2, Table 2.14	Under "Watershed Rehabilitation", add "Miles of Existing Road to be Decommissioned" in Alternative 2 would equal 5.93 miles which is missing in the DEIS.
Chapter 2, Table 2.23	Under "Watershed Rehabilitation", Miles of Road Put in to Long-term Storage should be 17.62 miles which is missing in the DEIS.
Chapter 3, Fire and Fuels Management, page 182	Alternative 2 proposes multiple regeneration harvests that exceed 40 acres in size. These units were proposed to try to implement treatments that would have been more commensurate to historical patch sizes while also favoring more fire resilient species. They are proposed on more moist sites that would have typically experienced mixed to stand replacing fire severity at a scale of hundreds to thousands of acres in size. Additionally, Units 147, 148, 149 and 150 in Upper Fivemile Creek and Unit 170 in Warland Creek were designed to tie in with past regeneration harvests to simulate a fire that would have burned from the creek bottom to the ridge top due to continuous fuels and favorable topography. This would have been more typical of historic patch size and burn pattern when strategically located directly adjacent to existing regeneration harvests that are still an effective barrier to high fire spread rates. Treatments of this scale are also more likely to disrupt large fire growth and spread and assist in the efficacy of suppression efforts when a fire occurs in these areas. Fire modeling indicates these areas are at risk of experiencing stand-replacing crown fire behavior if left untreated and both areas are within 1 ¼ miles of private property. In addition to the benefits described previously, Unit 362 near Hornet Ridge (Dunn Creek) was partially designed to provide a fuel break immediately adjacent to a major power transmission line. The other regeneration harvest units exceeding 40 acres (units 40, 62, 363, 73T, 75, 80, and 188) were not specifically designed with fire and fuels as the primary purpose because they are not strategically located to mimic a fire burning to the top of a ridge from the lower 1/3rd of a slope nor do they reduce the potential threat of a wildfire to private property. These treatments would still be effective at reducing hazardous fuels, reducing crown fire potential, and improving fire suppression efficacy. The proposed regeneration harvests under Alternative 2 would accomplish an additional 507 acres of hazardous fuel reduction than the same units identified under Alternative 3.
Chapter 3, Wildlife Resource, pgs. 224, 290, 300	Paragraph 2: After the sentence, "This strategy may result in openings…greater number of openings of lesser acreage." Add the following: Therefore, with the implementation of an action alternative, Alternative 2 which promotes large patch size, would better address the issues of edge effect, fragmentation, and interior forests than Alternative 3 which limits regeneration harvest units to 40 acres or less.
Chapter 3, Wildlife Resource, pgs. 224	Paragraph 7: "…would result in a MA 12 habitat effectiveness of xx% as compared to the existing level of 70%." The xx % should read as 74%.
Chapter 3, Wildlife Resource, pg. 308	After the sentences, "This could result in openings that may not be fully utilized by lynx and snowshoe hare as foraging areas. Creating these openings reduces overall edge effect and fragmentation that would occur with greater number of openings of lesser acreage." Therefore, Alternative 2 which promotes large patch size, would better address the issues of edge effect, fragmentation, and interior forests than Alternative 3 which limits regeneration harvest units to 40 acres or less.

Chapter 3, Noxious Weeds, pg. 324	Paragraph 1: Add date **(2001)** to (FSM2080.5)
Chapter 3, Noxious Weeds, pg. 327	Under Spotted Knapweed (Story 2006) should be (Story 2008)
Chapter 3, Noxious Weeds, pg. 329	Paragraph 5: The Purpose and Need…..add FEIS/ROD (USDA FS 2007)
Chapter 3, Noxious Weeds, pg. 330	(MSU News ….add Flaherty, Story 2008)
Chapter 3, Noxious Weeds, pg. 331	Paragraph 1 (KNFP) add (USDA FS 2007)

The literature cited list in the DEIS is incomplete. The complete list is printed here.

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Chapter 5 - Public Involvement

Public Involvement Summary

The following section summarizes public involvement since the inception of the project. More detailed information is available in the project file.

Proposed Action Development

During the spring of 2010, the District conducted a broad scale assessment of the East Reservoir Project area to identify management needs. This assessment characterized trends in the human, terrestrial, and aquatic features, as well as the vegetative conditions and ecological processes. Project area needs identified as important to implement within the next 10 years formulated the proposed action for the East Reservoir Project.

Proposed Action Scoping

Site-specific public comments on the East Reservoir Project proposed action were requested in December 2010 through a public scoping notice (Notice of Intent) in the *Daily Inter Lake, Western News and the Kootenai Valley Record.* Also a letter requesting comments was mailed to all interested individuals, groups, and officials. Comments received during scoping were used to help develop alternatives to the proposed action.

Public Comments on the DEIS

In June 2013, the District issued a Notice of Availability of the East Reservoir Draft EIS in the *Federal Register* (June 14, 2013) and a letter was mailed to interested parties reporting on the updated project status and requesting comments. A total of eleven comment letters were received during this scoping period.

Each comment letter was carefully considered by the interdisciplinary team, District Ranger and District Staff. Letters were analyzed and categorized to capture the full range of public viewpoints and concerns about the DEIS (Project File, Vol. D).

The analysis of comments is not a vote-counting process but rather is designed to discover concerns and develop alternatives to the proposed action where appropriate. Table 2 lists the DEIS commenter and the letter number as it appears in the Response to Comments.

Kootenai Forest Stakeholders Coalition and the Yaak Valley Forest Council

The East Reservoir Interdisciplinary Team (IDT) worked closely with the project team from the Kootenai Forest Stakeholders Coalition including the Yaak Valley Forest Council. The Kootenai Forest Stakeholders are a group of individuals and organizations representing diverse interests, to develop the project proposal and alternatives and help facilitate public involvement.

Tribal Involvement

The concerns of the Confederated Salish and Kootenai Tribes were solicited through project scoping. In addition, Loretta Stevens, the Confederated Salish and Kootenai Tribes/Kootenai NF Tribal liaison participated as an IDT member.

Other Agency Involvement

The US Fish and Wildlife Service (FWS) was consulted regarding fish and wildlife habitat.

The FWS concurred on August 8, 2013, that the project may affect but is not likely to adversely affect the Canada lynx or Canada lynx critical habitat and that the project may affect but is not likely to adversely affect the grizzly bear. The FWS stated the project is consistent with the Access Amendment and would not adversely affect the threatened grizzly bear in ways other than those analyzed in the 2011 biological opinion for the Access Amendment. Biological assessments document that the project will have no effect on Spalding's catchfly, bull trout or white sturgeon.

The Montana Department of Environmental Quality and the Environmental Protection Agency submitted scoping and DEIS comments on the project.

Table 2 - East Reservoir List of Commenters

Letter	Commenter
1	Montana Department of Environmental Quality (DEQ)
2	United States Department of the Interior
3	Alliance for the Wild Rockies -Sedler
4	United States Environmental Protection Agency
5	Bettge and Pittsley
6	The Lands Council
7	Alliance for the Wild Rockies - Garrity
8	J. Wandler
9	R. and B. Geber
10	Kootenai Stakeholders Forest Coalition
11	Yaak Valley Forest Council

Response to Comments on the DEIS

The following section provides a summary of substantive comments, as allowed in 40 CFR 1503.4, and responds in detail to those comments. Where similar comments were received, representative comments were chosen for response.

Letter 1: Montana Department of Environmental Quality

Comment 1: Water Protection Bureau: This construction is routine and may only require a construction storm water permit if the permitting threshold is reached. I am enclosing the Water Protection Bureau Fact Sheet that will allow you to plan permit needs according to your site conditions. If after looking at the fact sheet, you determine that your project may require further consultation with Water Protection Bureau staff please contact them.

Response: On March 20, 2013, in Decker v. NEDC, the Supreme Court reversed the Ninth Circuit's decision in NEDC v. Brown and held that the Clean Water Act and its implementing regulations do not require the NPDES permits for stormwater discharges from logging roads into the navigable waters of the United States. Note that, while NPDES permits for logging roads are not necessary, our proposals may require other permits prior to implementation. NEPA's DEIS requirements for declaring what Federal permits may be necessary still stand (40 CFR 1502.25(b)) as does the requirement to invite comments from the agencies which regulate those permits (40 CFR 1503.1).

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Comment 2: Water Quality Planning Bureau: Proposed actions near streams could increase siltation. Cripple Horse Creek is currently impaired for aquatic life support and cold-water fisheries due to siltation from agriculture, natural sources, and silviculture. Other waterbodies in the project area have not been assesses and may also be near thresholds for impairment.

We encourage you to regularly evaluate whether project best management practices (BMP) are sufficient to address the sediment increases that are likely to incur due to logging operations, road construction, and increased availability of sediment to transport to river systems. These BMPs must be sufficient to protect existing water quality and should be moving the watershed towards meeting water quality standards.

Response: The Forest Service has worked closely with the State of Montana with regard to BMP design, implementation and monitoring. A list of BMPs was included in the DEIS Appendix C. Additional design criteria can be found in Appendix 2 of this draft ROD. Both the State of Montana and Forest Service have conducted implementation and effectiveness monitoring (FEIS, Appendix I). It is expected that the activities proposed with this project, combined with the listed BMPs and design criteria, will at a minimum maintain current conditions and in some cases improve conditions within the watershed.

"All action alternatives include specific BMPs which are designed to disconnect the road system from the stream (e.g. prevent sediment from going down ditches directly into the stream). The implementation of BMPs may also diffuse the effects of roads intercepting and rerouting water. In addition, upgrading undersized culverts would enable the streams to accommodate higher flows more readily without resulting in aggradation or degradation at the inlets and outlets of culverts." (DEIS, Ch. 3, Water Resources, Environmental Consequences, pg. 153).
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Letter 2: United States Department of the Interior

Comment 1: The U.S. Department of the Interior has reviewed the Draft Environmental Impact Statement for the east Reservoir Project, Libby District, Kootenai National Forest, Lincoln County, MT. and has no comments on the document. The U.S. Fish and Wildlife Service advises that any Endangered Species Act issues will be addressed through the Section 7 consultation process.

Response: Thank you for your interest in this project. The U.S. Fish and Wildlife Service has been consulted on this project with concurrence received on August 8, 2013. Their response is located in the project file – Section U; Document U1.
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Letter 3: Alliance for the Wild Rockies

Comment: Table 2.13 indicates that Alt. 2 would result in 1,118 acres of even-aged/regeneration logging (ST, SW, CC, etc.) units that would be > 40 acres, which violates NFMA and therefore requires Regional Forester approval.

Response: That is correct, the National Forest Management Act (NFMA) of 1976 [16 USC 1604 (g) (3) (F) (IV)], establishes opening size limits according to geographic areas, forest types, or other suitable classifications. Regulations establish the size limit for our geographic area at 40 acres, with exceptions for larger openings when they will produce a more desirable combination of net public benefits.

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Comment: Table 2.15 indicates that Alt. 3 would limit the size of even-aged/ regeneration logging units to 40 acres. However, there are many IMP and San-Salvage units that are well over 40 acres included in Alt. 3.

Response: Improvement and sanitation harvests are intermediate harvests that remove only a portion of the trees, retaining a manageable stand. These treatments do not create an opening therefore they can be over 40 acres and do not need Regional Forester approval.

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Comment: The DEIS's action alternatives propose road storage and obliteration, which will close some roads and make others hydrologically neutral and closed to all travel. AWR is in favor of those actions and believes that they should be a high priority.

Response: Thank you for your support in this area.

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Comment: There is hardly any feature on forest landscapes that is more damaging to forest resources than roads. Roads are often not adequately maintained to prevent damage – such as sediment delivery to streams - due to inadequate Forest Service funding. For the same reason, AWR is also opposed to any new road construction, especially in areas where road density is already extremely high such as the East Reservoir PA.

Response: Your comments will be taken into consideration.

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Comment: We urge the Forest Service to identify the "right-sized" minimum road system for the project area required by the Travel Management Rule (36 CFR 212.5); identify the details of a plan in the FEIS that will achieve that, and then make a decision that, while it may conflict with some short-term interests such as commercial logging, will lead to long-term ecological improvement in targeted watersheds.

Response: The Travel Management Rule (Nov. 9, 2005) directs the Forest Service to conduct travel analysis to inform decisions related to travel management. The East Reservoir travel analysis has identified the minimum road system needed for safe and efficient travel and for administration, utilization and protection of National Forest System (NFS) lands (36 CFR 212.5(b) (1)). The analysis was used to inform decisions for the designation of roads for motor vehicle use in the project area, as shown on pages 3-394 through 3-403 of the FEIS.

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Comment: Please disclose in the FEIS the miles of road proposed for storage that fall in to the category of those that may be stored by taking no action because they are currently hydrologically inert. This is important because reconstruction of some revegetated roads would have the same adverse impacts as new road construction.

Response: Your comment will be taken into consideration.

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SOIL

Comment: Perhaps the most important ecological feature for forest ecosystems is the functioning and integrity of the soil. "Soil is a critical component to nearly every ecosystem in the world, sustaining life in a variety of ways—

from production of biomass to filtering, buffering and transformation of water and nutrients. …Because soils are critically important building blocks for nearly every ecosystem on earth, an holistic approach to natural resources protection requires that soils be protected…" (Lacy, 2001) A holistic restoration proposal would reduce the legacy effects from past timber harvest, and other human-caused disturbances which may affect watershed health and the terrestrial and aquatic ecosystems.

The Region 1 Soil Quality Standards (SQS) are quantitative (≤15% detrimental soil disturbance), demonstrating consistency and compliance involves disclosing the amount of detrimental soil disturbance (DSD) that now exists in Activity Areas, and what the cumulative totals would be following disturbance by trails, roads, fire lines, and other causes of DSD. Moreover, the Forest Service should recognize and acknowledge the fact that the 15% threshold is not based upon scientifically developed limitations on damage to soils and take the necessary steps to remedy that situation.

Response: The 15% threshold is based on research by Powers (1990). In order to meet NFMA direction and manage National Forest System lands without permanent impairment, the policy of the Northern Region is to "…not create detrimental soil disturbance on more than 15 percent of an activity area" (FSM, 2554.03). In areas where more than 15% detrimental soil conditions exist from prior harvest activities, the cumulative detrimental effects from project implementation and restoration should not exceed the conditions prior to the planned activity and should move towards a net soil improvement.

R1 Supplement 2500-99-1 (effective 11/12/1999) definition – Restoration - Treatments that restore vital soil functions to their inherent range of variability. It is recognized that treatments may not occur over a period of years and may need to be maintained. Restoration treatments could include, but are not limited to, tilling, ripping, seeding, mulching, recontouring if temporary roads and water barring.

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Comment: The DEIS provides a very vague explanation of the methods used to use measured soil survey data from assessment in the field to estimate total DSD for each proposed treatment unit. The accuracy of estimates given for previously impacted units is doubtful.

Response: As discussed on page 62 (DEIS, Chapter 3)…"All units containing evidence of existing soil disturbance related to past management activities received a full qualitative field survey using R1 Soil Survey Procedures. Field soil surveys consisted of random stratified transect/sample point methods with confidence intervals at or above 80% ± 5% with the majority of surveys being 95% ± 5%. Completed soil surveys can be found in the Soil Project File and/or District Files. Existing detrimental soil disturbance numbers are a result of all currently measureable effects of past actions in each activity area, including but not limited to timber harvest (trails and landings), temporary road construction, management related burns, cattle grazing, off highway vehicles, natural disturbances, firewood gathering, etc. These methods provide data that is used in the analysis to determine if Forest Plan and Regional Soil Quality Standards would be met..."

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Comment: The DEIS states that there has been a lot of logging in the project area in the past, in the era when soil impacts were of much lesser concern and therefore soil integrity was less protected. The fact that the DEIS does not even estimate the amount of DSD over the vast majority of those acres ignores cumulative effects on soil productivity and watershed health, which the Forest Service is required by NFMA to maintain. The soil quality standards the DEIS relies upon mostly limit damage to soils while carrying out the next set of management actions, without providing any scientifically justified metrics for maintaining soil productivity.

Response: The spatial scale or geographic bounds for considering the cumulative effects consist of the same activity areas analyzed for the direct and indirect effects. This is appropriate because soil productivity is spatially static and productivity in one location does not affect productivity in another location. The activity areas are delineated as directed by Forest Service Manual R-1 Supplement No. 2500-99-1.

As stated on page 97 (DEIS, Chapter 3)…"The temporal scale dependent on the issue being addressed with no one scale being appropriate for all issues…..Furthermore, there is often a lag between some options and the observed effect. This is particularly true for soils…"

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Comment: The DEIS also fails to adequately explain how measurements of conditions relating to measured soil damage equate with effects on short- and long-term soil productivity. The DEIS also ignores much science when it claims that soil erosion, displacement, and compaction do not affect soil productivity.

Response: Regarding soil productivity: As stated on page 96 (DEIS, Chapter 3)…"This project was designed to provide for a continuous supply of woody material based on recommendations by Graham et al. (1994) and brown et al. (2003)….It should be noted that currently under the KNFP, the required CWD tons per acre to be retained only applies to regeneration harvest activities. In stand improvement units such as commercial thins, future CWD is expected to result from natural events such as blow-over, root rot and beetle kill…"

Regarding soil erosion, displacement, and compaction: As stated on page 63 (DEIS, Chapter 3), the KNF does consider soil erosion, displacement and compaction equally as follows…"The soils in an activity area are considered detrimentally disturbed at a given sample point when one or a combination of any of the following attributes listed below is present due to past forest management activities:

a. **Compaction:** A 15% increase in natural bulk density. Soil compaction reduces the supply of air, water and nutrients to plants. Roading, ground based yarding, dozer and grapple piling activities are the major contributors to compaction.
b. **Soil Ruts:** Machine-generated soil displacement having smeared the soil surface in a rut. Wheel ruts at least 2 inches deep in wet soils.
c. **Displacement:** Removal of one inch or more surface soil continuous area greater than 100 sq. feet which often consists of the O and A soil horizons. Displacement removes the most productive part of the soil resource. Temporary roads, skid trails, ground-based yarding, dozer piling and cable corridors are the major contributors to displacement.
d. **Surface Erosion:** Indicated by rills, gullies, pedestals and localized soil displacement.
e. Severely burned Soils: Physical and biological changes to the soil resulting from high-intensity burns of long duration in the Burned Area Emergency Rehabilitation Handbook (FSH 2509.13).
f. **Soil Mass Movement:** Any soil mass movement caused by management activity.

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Comment: The March 2009 "Region 1 Approach to Soils NEPA Analysis Regarding Detrimental Soil Disturbance in Forested Areas: A Technical Guide" states, "When these indicators (compaction, rutting, burn severity, displacement, surface erosion and mass movement) are found, the soil is considered disturbed. When management activities cause the indicators to exceed the threshold established in the soil quality standards, the disturbance is considered detrimental (potentially impairing productivity)." The DEIS fails to demonstrate that the disturbances noted in soil surveys for the ER PA meet objectively and reasonably established thresholds.
Response: The adequacy of the Soils Technical Guide is beyond the scope of this project. The above summarizes only what may be present on a single location within a proposed unit. Total DSD calculations are a quantification summary for the entire unit along with temporary roads and landings. As a result, the total detrimental values to determine if soil disturbance exceeds 15% are a quantitative summary value.

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Comment: The March 2009 Region 1 Technical Guide indicates that the Forest Service allows those doing soil surveys to lack basic scientific training or other proper qualifications. Potentially untrained personnel are the one ones collecting the field data, therefore solely making the determination of what is or what is not DSD. It is not clear if the KNF surveys for this project were collected by properly trained and qualified individuals.
Response: All data for the East Reservoir Project were either collected by the KNF Forest Soil Scientist or someone who has been trained in soil survey procedures.

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Comment: Also, the March 2009 Region 1 Technical Guide does not specify or define the various levels of soil survey intensity, which would allow the public to understand how soil surveys themselves can provide accurate information. Legacy soil damage such as compaction may not be evident from simple visual surveys or shovel tests. Furthermore, the accuracy of soil compaction estimates using the survey methodology the KNF utilized cannot be determined, because the DEIS did not disclose the accuracy and reliability of those techniques.
Response: The adequacy of the Soil Technical Guide is beyond the scope of this project.

The soil surveys completed by the KNF Soil Scientist or KNF Soil Assistant are completed with equal intensity thus resulting in a confidence interval at or above 80% ± 5% with the majority of surveys being 95% ± 5%. As a result, the KNF reviews provide a very accurate quantitative value of what the existing physical conditions are within the proposed management units. All data points are consistently sampled by reviewing the existing soil at every other pace. Each pace is considered to be a sample location and soil review is completed with a tile spade shovel to determine the resistance to penetrating the soil. Physical resistance to penetration was found to correlate well with altered soil conditions related to management activities. In areas displaying the strongest properties of legacy soil compaction, the shovel blade is only capable of penetrating a short distance into the soil and with great effort.

The accuracy in soil disturbance values has been solidified through a very intensive post-harvest soil monitoring program of units previously harvested and had fuel treatments completed. This soil monitoring program originated in 1988 and is continuing into the future. As of 2012, a sum of 254 timber sales (538 timber sale units) involving 6,625 acres have been monitored following harvest and fuel abatement activities to determine the impacts of timber removal activities on soils within the KNF. This information has been used to solidify the amount of disturbance expected to occur based on differing harvest practices using different pieces of machinery.

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Comment: The KNF apparently has no regulatory mechanism, based on NFMA, which addresses the permanent

loss of soil and land productivity due to influx of noxious weeds caused by active management. The DEIS cites no monitoring results that demonstrate affirmative control of noxious weed outbreaks, nor is any monitoring of the efficacy of noxious weed treatments cited in the ER PA.

Response: The East Reservoir DEIS (DEIS pg. 329) has incorporated by reference the Kootenai National Forest Invasive Plant Management FEIS/ROD (2007) (KNFIPM FEIS/ROD) which addresses the environmental effects of invasive plant treatments and authorizes control including chemical and biological control. The EIS also states, "*field studies of the effects of herbicides on soil microorganisms are limited. The risk assessments conducted by SERA conclude that the plausibility of adverse effects on soil productivity from any of the proposed herbicides is minimal. Results from studies on 2,4- D, aminopyralid, chlorsulfuron, clopyrali, and metsulfuron methyl indicate that the maximum concentrations projected in the soil following herbicide application would be below the toxic effect level. Laboratory and/or field studies on the other eight herbicides (dicamba, glyphosate, hexazinone, imazapic, imazapyr, picloram, sulfometuron methyl, triclopyr) indicate some level of inhibition in soil microbial activity but substantial impacts on soil – i.e. gross changes in capacity of soil to support vegetation – do not seem plausible. Field experience in the use of these herbicides in cropland situations indicates no change in soil productivity that would inhibit plant growth* (KNFIPM FEIS pg. 3-100)."

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HABITAT– Large Woody Debris

Comment: As recognized by the Forest Service in documentation for other projects: "[l]arge woody debris is essential for maintenance of sufficient microorganism populations and long-term site productivity." (IPNF's Bussel 484 DEIS at 161.) In order for to adequately analyze and disclose cumulative effects, in the context of such "essential" factors, field surveys of representative past logged areas must be performed in the project area. The DEIS fails to disclose data from project area surveys for coarse woody debris in old logging units, which is necessary in order to accomplish an adequate cumulative effects analysis.

Response: Under the snag analysis, starting on page 210, the DEIS (Chapter 3) discloses that harvest units implemented prior to the 1987 Forest Plan lack sufficient snags and subsequent down woody debris. Likewise, it discloses that areas cut between 1987 and 1992 contain modest amounts of down wood. Similarly, the snag analysis gave areas within 100 feet of any road a zero value for providing snags and down wood. These conservative values are considered worse-case estimates, which more than account for the lack of down wood and snags within some areas of the analysis area and allow for a realistic analysis for this resource.

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Comment: Applying the concept of Historic Range of Variability (HRV) for sustaining forest ecosystems, as the DEIS does, may be appropriate as long as the uncertainties pertaining to reference conditions of the project area are addressed, and all important resource conditions are adequately considered within the HRV framework. The DEIS, unfortunately, represents an imbalanced use of the HRV concept. For example, given the paucity of historical data of timber stands and landscape patterns in the project area, and given that existing data is obsolete, the DEIS's analysis does cannot adequately support the proposed manipulation of timber stands. It is extremely important to utilize recently gathered data in order to make accurate determinations of the reference conditions and to be able to therefore correctly identify departures from the reference conditions (Churchill, 2011; Noss, 2001).

Response: Churchill (2011) was written to provide a science summary for mesic forests for the Colville National Forest restoration strategy. Churchill (2011) explains how HRV needs to use a variety of tools, it is not as simple as just having current data.

"……Use multiple tools to derive site specific targets: Pre-settlement conditions offer a baseline from which to evaluate current conditions and obtain a general direction for restoration. They are especially useful in identifying conditions that are clearly outside of historical precedent. They can often tell us clearly what *not* to do. Deriving specific targets from HRV is much more difficult, as the range of historical conditions is so wide. HRV should be combined with functional information and tools such as habitat requirements for focal species, fire modeling (e.g. flammap), aquatic restoration needs, and other objectives…."

In addition, Noss (2011) states:

"…the variable nature of ecosystems suggests that conservationists have a moving target. …One of the most useful new ideas is the concept of "natural" or "historic" range of variability. This concept recognizes that natural ecosystems are always changing, but that variation over time falls within certain bounds. …Many ecologists consider the historic range of variability before European settlement (in North America) to be the appropriate set of "reference conditions" for comparison with human-altered conditions and a guide to enlightened management.…The logic behind the use of historic variability to guide ecosystem conservation and management is compelling. …The challenge for conservationists is not to prevent change. A sustainable relationship with a dynamic earth requires that we allow ecosystems to respond to environmental change with minimal losses of biodiversity. That means assuring that the changes we impose on ecosystems are within the range of variability that native species have experienced over their evolutionary histories."

In order to understand the variations ecosystems have experienced over time, a variety of data sources are needed. For instance, Noss makes reference to data from fire scars on trees and pollen and charcoal laid down in lake sediments that helped assess and understand fire-return intervals and proportions of old growth in the Oregon Coast Range over the last 3,000 years. Such data could have been gathered several decades ago and still be relevant when it comes to understanding the historic range of variability in a forested environment.

Managing the forest for multiple resources while attempting to emulate natural processes is not an exact science where there is one correct solution. The reference conditions that are used in this project analysis were derived from a variety of sources. The ranges of conditions are estimates based on a synthesis of information from research of historic vegetation (Lesica 1996, Losensky 1994, Fisher and Bradley 1987) as well as other documents and analysis such as the Interior Columbia River basin Ecosystem Management Project (USDA, USDI 1997). Historic and pre-historic information (back to 351 A.D.) from research (Chatters and Leavell 1995) of bog cores (analyzed to identify the species composition from pollen found in the cores) were also used to develop the reference ranges. The reference conditions used in this analysis are documented in the Vegetation Response Unit Characterizations and Target Landscape Prescriptions (USDA Forest Service 1999).

District vegetation databases (FACTS, FSVeg), a R1 Summary Database and field reconnaissance were utilized to generate information on forest vegetation attributes such as forest cover type, stand density and successional stage, the vegetation response unit (VRU) classification, incidents of insect and disease, as well as information on past activities. Annual aerial observations of insect and disease activities were also evaluated to facilitate understanding of longer term fluctuations in insect and disease dynamics across the landscape. Aerial photographs, both historic and contemporary were used at various stages of the analysis. Scientific literature, field reviews and subsequent silvicultural assessment were also used in the analysis. These analysis tools were used to identify site-specific treatment needs that address the purpose and need for the project.

The inherent limitations to the database and models are recognized. Not all surveys and subsequent data come from the same time period, with some surveys over 20 years old. A portion of the areas with older data were field reviewed and determined it was still valid for analysis. The data is used primarily for broad generalizations, arithmetic sums and means, and to supplement current, site-specific information gathered at each proposed unit and area of interest. R1 FSVeg has adequate resolution and accuracy for applications required in this effects analysis discussion.

We are not attempting to recreate past conditions, and do acknowledge that the modern human imprint cannot be eliminated. Our proposal to restore ecosystems within a broad historical range is an attempt to keep all the parts, and to maintain a sustainable and resilient ecosystem, based on coarse filter management theories.

Proposed management activities are designed to fit within acceptable and manageable historic ranges (reference conditions) we have identified, and are designed to foster the processes and patterns that make up the ecosystem. Knowledge of historic conditions and natural disturbance processes, as described in the VRUs later in this analysis, can help clarify the types, extent and causes of ecosystem changes, and can help identify management objectives and restoration priorities (Brown 2004). It is hypothesized where community composition and structure occur within a historic range of conditions, the function of the landscape community will also be maintained within its historic range. It is important to note that function cannot be maintained by restoring the vegetation structure, composition and patch size without restoring fire on the landscape. No mechanical means alone can duplicate the unique ecological effects of wildland fire, such as soil heating, nutrient recycling, and the resulting effects to the community composition and structure (Kauffman 2004, pg. 880).

Reference conditions provide insights to important questions such as natural frequency, intensity and scale of disturbances, abundance and rareness of plant and animal species, and the age-class, size classes, and tree species composition (Kaufman et al. 1994). They also provide a valuable tool when combined with other information gathered from a variety of sources, such as site-specific investigation, old timber type data, old photos, fen (bog) sediment analysis, fire scar analysis, historical and research references, and inferences from VRU classifications designed for the Kootenai National Forest.

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OLD GROWTH

Comment: Whereas the project, according to the DEIS, would retain the largest trees in treated units, the DEIS also discloses that logging of some large-diameter trees may occur. This is inconsistent with the best science on the relative scarcity of large, old trees on the landscape—even outside old growth. (E.g., Hessburg, et al. 2007.) The action alternatives would be more in sync with the latest science if a diameter limit on tree removal was adopted that would leave standing the vast majority of large, old trees in treated units.

Response: Silvicultural prescriptions will generally focus on retention of the largest trees in the stand, which are

usually the most fire-resistant (Agee and Skinner 2005). Generally, the largest trees are left in every stand but it depends on logging systems and on the tree condition and species. Large diameter trees will be cut if they will not be expected to remain standing after dying for a reasonable period of time, or will not survive a fire. Some species have structural characteristics (moderately rot resistant wood, deep root system) that allow them to stand for years after dying, making good long-lasting snags (e.g. western larch and ponderosa pine). These species are left for multiple purposes including providing for future snags. The DEIS displays the number of trees per acre (or square feet of basal area) that will be retained by prescription as well as the replacement snags per vegetation type. All snags 10" in diameter and great will be left on all treatment areas where they exist.

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Comment: Due to the fact that the KNF apparently lacks an accurate, reliable forestwide old-growth inventory, it appears that the Forest Service is unwilling to take the most basic, necessary steps to assure viability of old growth dependent wildlife.

Response: The amount and distribution of old growth is monitored annually and documented in the annual Forest Plan Monitoring Report. These reports are available on the Kootenai National Forest website and in the Project File for East Reservoir. The KNF is currently meeting old growth standards set by the 1987 Forest Plan.

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Comment: According to the ER DEIS, the majority of the unmanaged stands in the watershed are mature forest. There is definitely a need to manage timber so that an adequate amount of this habitat exists and will continue to exist on the KNF.

Response: The existing condition of the vegetation was compared to the desired condition and treatment was proposed on stands were the existing condition did not resemble the desired conditions. In some cases, due to the management area designation like old growth, a stand was not proposed for treatment due to other resource objectives.

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Comment: Regarding the maintenance of potential future old growth: the lack of a desired condition statement for this important wildlife habitat compromises the scientific credibility of the DEIS. Whereas the DEIS includes active management prescribed to meet some desired conditions related to vegetation, a high priority should be to identify areas that would be specifically preserved as old growth - in order to maintain long term habitat for old-growth MIS and other key wildlife. The areas selected to be preserved should be based on the HRV of old growth and the latest ecological science[1] are necessary to meet forest plan and legal requirements for insuring viable populations of wildlife.

Response: Recognition of the need and desire for a variety of habitats for wildlife, including old growth, is demonstrated by the first two statements under the purpose and need for the proposed action. The amount and distribution of old growth is monitored annually and documented in the annual Forest Plan Monitoring Report. These reports are available on the Kootenai National Forest website. The KNF is currently meeting old growth standards set by the 1987 Forest Plan.

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Comment: The EIS conflates "replacement old growth" with old growth that meets Green et al. criteria in various analyses. This is not in accord with the best science, NFMA, or NEPA, since the DEIS admits that "replacement" old growth is not required to meet the criteria.

Largely because of past logging, the project area falls well below the HRV for old-growth habitat conditions—even well below the 10% forest plan distribution standard. We appreciate that the DEIS documents the FS designating "replacement" old growth to meet and even exceed the 10% distribution standard, however the result, as indicated on Old Growth Map 10, is still highly fragmented habitat with no dedicated habitat areas for connectivity. This is not consistent with the best available science.

Response: While areas designated as old growth are not currently optimal, these areas are very well connected as demonstrated by the amount of cover disclosed under the analysis for large ungulates (i.e. elk, deer, etc.). Current cover levels on National Forest and US Army Corp. of Engineer lands exceeds 80% of the analysis area

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Comment: Information from the KNF's Gautreaux (1999) indicates that about 22% old forest or old growth is at the lower limit for "reference conditions" on the KNF. The KNF's Dueker and Sullivan, 2001 state: "We recognize that historical conditions probably provided a higher level of old forest habitat through time than what is provided by the Forest Plan direction (a mean of 27.7% as opposed to 10%)." So utilization of the Forest Plan's 10% old-growth Standard itself is not consistent with the KNF's own best available science on "reference conditions." Lesica (1996)

[1] See for example, Camp et al. 1997 regarding "old-growth refugia", or the areas on the landscape where old growth would likely persist in the face of natural disturbances, based upon such factors as slope, aspect, juxtaposition with streams, and forest types.

stated that use of 10% as minimum old-growth standard may result in extirpation of some species. This is based on his estimate that 20-50% of low and many mid-elevation forests were in old growth condition prior to European settlement. The KNF has never completed an analysis, based upon the best scientific information available, that adequately analyzes the wildlife viability implications of managing the KNF well below the HRV.
Response: Recognition of the need and desire for a variety of habitats for wildlife, including old growth, is demonstrated by the first two statements under the purpose and need for the proposed action. The amount and distribution of old growth is monitored annually and documented in the annual Forest Plan Monitoring Report. These reports are available on the Kootenai National Forest website. The KNF is currently meeting old growth standards set by the 1987 Forest Plan**.**
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Comment: The EIS does not disclose how much old growth, or how much habitat for old-growth associated wildlife species, has been destroyed or degraded by all the past logging in the project area. These past cumulative impacts, especially regarding their effects on old growth dependent species in the ER PA are not included in the old growth analysis, which is a violation of NEPA.
Response: The DEIS provides a list of past management activities in the Cripple PSU, on page 3 of Chapter 3, dating back to 1976. Prior to 1976 records are few. Likely several of these treated areas contained large diameter trees, but whether or not all elements of old growth were present is speculative. Since 1987 the KNF has been managing old growth at 10 percent in all major drainages and will do so until new standards are in place. The amount and distribution of old growth is monitored annually and documented in the annual Forest Plan Monitoring Report. These reports are available on the Kootenai National Forest website. The KNF is currently meeting old growth standards set by the 1987 Forest Plan.
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Comment: The FS acknowledges that a substantial percentage of the old-growth blocks counted as "effective" old-growth in the KNF are less than 50 acres, however Forest Plan states that this designation of such small blocks as effective was to be the "exception rather than the rule." Since the Forest Plan indicates that blocks of old-growth timber less than 50 acres in size do not "provide habitat for those wildlife species dependent on old-growth timber for their needs", it cannot be "best science" for any of the blocks less than 50 acres to be considered "effective" old growth for inventory and viability analysis purposes.
Response: Designated old growth acres within the Cripple PSU are 50 acres or greater. There may be some areas of undesignated old growth that are less than 50 acres which is the rationale for why they are undesignated.
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Comment: Since there is no scientific support for the premise that the present amount and distribution of designated effective old growth and replacement old growth (ROG) in the ER PA supports viable populations, it is unfortunate that the project activities will deplete even more habitat for the wildlife that are associated with old growth. This runs counter to the forest plan and NFMA mandates to assure viable populations.

The DEIS's analysis methodology allows the Forest Service to continually log mature forest whenever and wherever, without considering the potential of those areas to achieve the HRV of old growth, connectivity, patch size, edge effects, etc.
Response: The East Reservoir project does not propose harvest in any areas designated as old growth. In other mature stands, vegetation treatments were specifically designed to promote the growth of large trees and help protect existing desired large trees, such as remnant larch and ponderosa pine from insect and disease. Sixty eight percent of the commercial timber harvests in both alternatives 2 and 3 are intermediate harvest treatments that focus on leaving the largest healthiest trees. These harvest treatments would retain the best Douglas-fir and most of the ponderosa pine and western latch. In most cases, these largest trees are also the oldest trees in the treatment areas. Stand density reduction would also occur with these intermediate harvest treatments which will promote the growth of large diameter trees as well as increase the resistance to insect and disease. The residual stand structure would vary in size and arrangement as the leave trees would not be evenly spaced. All of these objectives would promote long-term mature forest with a variety of wildlife habitat. Please refer to the vegetation section, pages 48 and 49, of the DEIS for additional information.
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Comment: The KNF and project area are not being managed compliance with the MA 13 Facilities Standard #1, which requires that "Local roads will be restricted to prevent premature cutting of the snag component" (Forest Plan at III-56). We note that both of the action alternatives would exacerbate this negative situation by fragmenting old growth and increasing edge effect by new roads and logging adjacent to old growth, worsening the viability situation for old-growth associated wildlife.
Response: Where old growth areas are thought to be susceptible to firewood cutters, they are signed as "no firewood cutting" allowed and enforced through the issuance of form FS-2400-001 (Forest Products Removal Permit and Cash Receipt). These permits are issued under certain conditions which clearly state where firewood

cutting is permissible. Granted some snags in old growth are likely lost due to individuals not adhering to these permit conditions are those caught are prosecuted to the extent that the governing laws allow.

The East Reservoir project does propose new temporary roads (666 feet). Construction of these roads will likely remove some snags and this effect is disclosed in the DEIS beginning on page 204. Following the use of temporary roads, the temporary prism will be decommissioned and not passable by firewood cutters so a continued effect on snags is not anticipated. Any portions of new permanent roads through old growth will be restricted by a barrier (gate, rocks, berms etc.) following treatment activities and again, snags will not be susceptible to firewood cutters unless illegal trespass occurs.

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Comment: PILEATED WOODPECKER OG MIS

The DEIS states that pileated woodpeckers have been sighted in the ER PA, though apparently there has been no pileated woodpecker nesting documented in the project area. This may be attributable to KNF forest plan direction that does not recognize that the average snag diameter preferred for nesting habitat is almost 30" dbh for this MIS. The need for large diameter snags for nesting trees for the pileated woodpecker is downplayed in the DEIS. McClelland and McClelland (1999) found, in their study in northwest Montana, that the average nest tree was 73 cm. (almost 29") dbh. The DEIS does not consider that such large snags are absolutely necessary for keystone wildlife species such as the pileated woodpecker, therefore absolutely necessary for the many species that rely upon cavities excavated by the pileated for their nesting and other life stage habitat.

The DEIS does not present survey data on pileated woodpecker population abundance or nesting success in the project area. Since there is no scientific basis for assuming that 10% old growth is enough for species viability, and since there is no scientific basis to support the KNF's use of its MIS as adequately "indicating" for other old growth dependent species including the fisher, flammulated owl, northern goshawk, etc., the proof would be in the monitoring. The Forest Service has not completed monitoring that would validate the assumption inherent in the Forest Plan's old-growth habitat standards—that they are adequate for assuring old-growth species' viability.

Response: The DEIS discloses potential effects on old growth, snags, down wood, and pileated woodpecker beginning on page 200.; the fisher on page 265, flammulated owl on page 270, and the northern goshawk on page 235. The DEIS, on more than one occasion discusses the importance of large diameter trees and subsequent snags for these species.

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Comment: NORTHERN GOSHAWK

The DEIS (at 235, 236) indicates that goshawk habitat modeling, which relies on vegetation information previously collected by the Forest Service, indicates that there are 57,000 acres of primary goshawk nesting habitat in the Cripple PSU. The average goshawk pair territory is 5400 acres according to the Potential Population Index (PPI). Surveys in 2011 confirmed the presence of one active goshawk nest in the Cripple PSU. Apparently this confirms the Forest Service's conclusion that the area is capable of supporting – and will continue to be capable of supporting a viable population of goshawks. If that is the case then why is there, as far as the Forest Service knows, only one active goshawk nest in the Cripple PSU? Given the large amount of "primary" goshawk nesting habitat that supposedly exists there it should capable of supporting at least 10 nesting pairs, which is the PPI for the Cripple PSU.

Response: Northern goshawks, especially during the breeding season, can be difficult to find. Likewise, individuals respond differently to solicit calling. The fact that only one goshawk pair responded to surveys does not rule out the existence of other breeding pairs in the PSU. It is likely additional pairs of nesting goshawks will be found during implementation and, if so, nesting territories will also be established for these goshawks.

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Comment: It seems clear that the Forest Service habitat modeling protocol fails to provide an accurate accounting of suitable habitat (nesting and/or other life stages) or there are other factors not being considered by the Forest Service which cause the habitat to not be utilized by the target species, in this case the northern goshawk. Clearly more diligent surveys need to be conducted to verify the presence, or non-existence of goshawks and other old growth dependent species in areas that are targeted for the extensive habitat changes such as those proposed in Alternatives 2 and 3 of the ER Project. Those other species include the pileated woodpecker, fisher and flammulated owl.

Lacking valid scientific support for its habitat management strategy, and without adequate historical and current population data based on actual surveys in the ER PA, the Forest Service has failed to establish that viable populations of MIS and old growth dependent species, as well as sensitive and threatened and endangered species, exist and will continue to exist in the ER PA and on the KNF in general.

Response: Northern goshawks, especially during the breeding season, can be difficult to find. Likewise, individuals respond differently to solicit calling. The fact that only one goshawk pair responded to surveys does not rule out the existence of other breeding pairs in the PSU. It is likely additional pairs of nesting goshawks will be found during

implementation and, if so, nesting territories will also be established for these goshawks.

There are numerous snags in the Cripple PSU with sign of pileated woodpecker activity and individuals are often seen or heard by forest personnel during field visits to the area. The presence and signs of pileated woodpeckers remain largely undocumented because of their common occurrence.

There is no recent information on fisher in the Cripple PSU to suggest nothing other than transient use of any habitat that may be available and suitable. Additionally, the fisher spends much of its time within thick, riparian habitats where human access and use is limited due to ruggedness. For this reason, fisher go largely undetected from humans by avoidance. Therefore, potential habitat was modeled assuming fisher may be present as a transient species and each alternative was analyzed for its impact on potential habitat.

The population size for flammulated owls on the KNF is unknown (Ibid), however Libby District records indicate at least 11 past sightings/vocalizations of flammulated owls within the Cripple PSU (NRIS Wildlife) dating from 1992 to present. The latest flammulated owl documented to occur in the Cripple PSU was during recent surveys (2011) which solicited responses using taped owl calls.

Unsuccessful surveys for this species can often be attributed to the presence and response from other owl species, especially great horned owls, which are known to prey on the flammulated. Once other owl species respond, the flammulated owl, out of self-preservation, typically do not answer solicited calls. Surveyors are trained to stop calling for flammulated owls when other (large predators) owls respond at a given survey point(s). Due to the abundance of great horned owls and the risk of predation, the flammulated owl can be difficult to find.

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Comment: The Committee of Scientists (1999) makes this point about species viability:

> (P)erhaps the single best metric of sustainable use of land is the persistence of species over time. The public needs to understand that the productivity of an ecosystem can be sustained over the long term only if species persist.

Population dynamics include assessing population size, population growth rate, and linkages to other populations and must be included in a scientifically sound population viability analysis. Ruggiero, et al. (1994a) point out that a sound population viability analysis must utilize measures of population dynamics. Mills (1994) explains the range of parameters that must be used to make a scientifically sound assessment of the viability of wildlife species. Population dynamics refers to persistence of a population over time—key to making predictions about population viability.

Response: Documentation for presence or absence of all suspected species and what is known about their populations for the analysis area is disclosed in the respective sections of the DEIS. This DEIS does not attempt to conduct a true population viability analysis because the scale of the project would not be appropriate. It does, however, disclose what is known about local populations of wildlife species as well as the habitat conditions for each of the species addressed or brought forward in comments.

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Comment: The key factors that affect population dynamics of those MIS and Sensitive species are not adequately considered in the cumulative effects analyses, therefore viability is not assured, as NFMA requires. The DEIS does not disclose and utilize the best scientific information available on those species, as NEPA requires.

Response: The project complies with NFMA direction (16 USC 1604 (G)(3)(b) to "provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives, and within the multiple-use objectives of a land management plan adopted pursuant to this section, provide, where appropriate, to the degree practicable, for steps to be taken to preserve the diversity of tree species similar to that existing in the region controlled by the plan."

Field surveys for various species were conducted during the planning of this project with results disclosed under the discussion for individual species. Potential effects of this project on these species or their habitats are also disclosed as required under each respective resource section.

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THE CLIMATE CHANGE FACTOR

Comment: The science on climate change supports the idea that national forest management emphasis should shift away from logging to carbon storage. All old-growth forest areas and previously unlogged forest areas should be preserved indefinitely for their carbon storage value. Forests that have been logged should be restored and allowed to convert to eventual old-growth condition. This type of management has the potential to double the current level of carbon storage in some regions.

Response: The comment suggests the Forest Service's emphasis should shift to carbon storage and all old growth forest areas and previously unlogged forest areas should be preserved indefinitely for their carbon storage value. The

scientific literature cited by the commenter does not support the policy prescriptions they suggest, particularly within the disturbance driven ecosystems of the inland west, including the East Reservoir area (see literature discussions in Forest Carbon Cycling and Storage Report (PF, Vol. S, Doc. 29). In addition, inferred carbon inventory maintenance or gains from deferred harvest can be an illusory claim, particularly applied at stand level practices such as in the East Reservoir Project. These implied gains only hold true if harvest does not occur elsewhere in the world to supply the same world demand for timber (Gan and McCarl 2007; Murray 2008; Wear and Murray 2004). The result can be a net carbon impact if the timber is replaced in the marketplace with higher carbon source products such as steel or concrete or is harvested in a manner that does not result in prompt reforestation (Ryan et al. 201 0; Harmon 2009). However, the "no-action" alternative (Alternative 1) in the DEIS effectively represents the comment's intent, and the effects of the various alternatives on carbon storage and flux were examined (East Reservoir FEIS, Forest Carbon Cycling and Storage Report (Vol. S, Doc 29) in the project record).

The scientific and other literature provided in the comment has limited direct relevancy to the issue at hand: whether or not the relationship of the East Reservoir Project to "climate change" warranted more detailed analysis in this DEIS. All represent valid studies or treatises on their particular subject matter (arguably with the exception of Hanson 2010), however their scope is either at the global scale or else study or focus on ecosystems quite different than those being considered here.

For example, the various Harmon papers (1990, 2001, 2002), Keith et al. (2009), and Homann (2005) deal largely with the relatively warm, wet forests of the Pacific NW where disturbance and succession dynamic, and thus carbon dynamics, differ substantially from those of the Kootenai National Forest.

Turner et al. (1995) and Woodbury et al. (2007) report estimates of existing carbon stocks and flux in U.S. forests. Neither paper recommends conversion of all forests to old growth conditions, or suggests a land management policy similar to that proposed in the comment. Similarly, Turner et al. (1997) is a brief letter to the editor commenting that another paper overestimates the potential benefits of carbon storage in harvested wood products and aforestation. Kutsch et al. (2010) presents a standardized protocol for the assessment of soil CO_2 fluxes, with particular focus relative to monitoring national carbon budgets under global climate treaties and VanderWerf et al. (2009) is a scientific commentary recognizing that deforestation (which is not part of this proposal) is the second largest anthropogenic source of carbon dioxide to the atmosphere. Solomon et al. (2007) is the IPCC Summary for Policymakers on the physical science basis for climate change. All, within their global perspective, speak to human actions quite unlike those contemplated here.

Harmon 2009 is Dr. Harmon's testimony to Congress concerning "The Role of Federal Lands in Combating Climate Change." His seven key points are: "1) Forests are leaky carbon buckets; 2) Forests can play an important, but limited roles in sequestering carbon; 3) All carbon pools need to be examined when thinking through the merits of carbon policy; 4) To increase the sequestration of forest carbon, we need to either increase carbon inputs, decrease carbon outputs, or put forest carbon somewhere else; 5) Forests are best seen as a bridging strategy in carbon mitigation; 6) Seemingly "good" forest carbon ideas when examined at the stand level at a point in time dissipate when looked at the forest level over time; and 7) With accelerating climate change, forests may shift from being part of the carbon solution to being part of the carbon problem." The testimony is insightful and readable, but is aimed at national policy and does not support the comment's conclusions.

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Comment: The fuel reduction proposed actions have forest health implications—including adverse effects. Since the fuel reduction regime represented by the proposal was not a planning scenario dealt with in sufficient detail (if at all) during 1987 Forest Plan development, both the project-level and programmatic ecological and economic costs and impacts remain unexplained and undisclosed. The Forest Service has not disclosed just how much of the KNF needs to be treated for fuel reduction in a manner that emphasizes maintaining fuel conditions that are not necessarily consistent with native ecological processes. The agency must address the cumulative impacts of fire and fire management under the current KNF fire policy.

Response: From a fire and fuels management standpoint, fuel treatments in the WUI are the priority and the main objective is to provide for firefighter and public safety. When it does not conflict with this objective WUI fuels treatments are also intended to be consistent with native ecological process. Fuel treatments outside the WUI are intended to meet the purpose and need of the East Reservoir project.

Cumulative impacts from fire suppression are addressed in Chapter 3 (Pages 176-177) under the No Action Alternative of the Fire and Fuels Management section.

Analysis of the Kootenai National Forest's fire suppression policy and how much of the Kootenai National Forest needs to be treated for fuel reduction is beyond the scope of the analysis for this project.

WATER QUALITY/HYDROLOGY

Comment: The large amounts of proposed canopy reduction via logging and burning concerns us also because of the presently unstable condition of creeks and tributaries. Bedload sediment effects go largely ignored. Therefore the impacts of rain-on-snow and other peak flow events are not adequately analyzed. The DEIS is not consistent with the best science on forest hydrology.

The DEIS relies upon BMPs for showing consistency with the Clean Water Act, yet doesn't disclose effectiveness of BMPs for that very purpose. The condition of most of the managed watersheds on the District argues against the validity of BMPs for protecting water quality and fisheries.

Response: Using the Rosgen methodology for assessing stream conditions, all the streams in the analysis area were determined to be in a Fair to Good condition. The proposed canopy reduction as well as proposed peak flow increases is within the range for streams in Fair and Good condition and as recommended in the Forest Plan.

BMP effectiveness and tracking for the KNF are located in the Water Resources Project File Appendix D and E.

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Comment:

The DEIS discloses that bull trout and redband trout have likely been extirpated from the project area due to management actions. It also does not give any indication of population trends of the Sensitive westslope cutthroat trout—if surveys are showing maintaining, improving, or declining stocks.

Response: Surveys show that fish are utilizing available habitat. Electrofishing surveys found multiple year classes in fish bearing streams throughout the project area. INFS default RHCAs will continue to protect aquatic habitat and will avoid retarding RMOs. Streams in the project area were treated to remove native fish and allow stocked westslopes and advantage for spawning and rearing. The drainages have not been stocked are now repopulated with hybrid fish along the reservoir. Dunn Creek was not treated, however past stocking of the Kootenai River and its tributaries created an extensive hybrid swarm of fish. These fish have invaded Dunn Creek creating hybrid rainbows/cutthroat trout. The upper segment of the stream has a nearly pure population of westslopes that are isolated from lower Dunn Creek. This population is regulated by flow conditions. There is only one perennial tributary in upper Dunn Creek. The beaver flats below this tributary have been trapped out and no longer maintain water from year to year.

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Comment: The DEIS does not discuss the fish viability issues related to stream segments not meeting INFISH/Forest Plan Riparian Management Objectives (RMOs). The DEIS does not provide clear analysis as to how RMOs would not be adversely affected, or achieved over any time frame.

Response: Refer to Tables 3.47 to 3.51 in the Fisheries and Aquatic Species Resources section of the DEISs. These tables set the stage for RMOs in the project area. Fish viability was shown through electrofishing surveys which proved the existence of multiple year class fish. We know fish are using available habitat and maintaining populations that the local ecosystem can support. The data shows that, in general, most RMOs are being met or exceeded. Large wood debris numbers fully meet or exceed Forest Plan standards in drainages across the project area. Bank stability also meets or exceeds standards. Width to depth rations and pool frequency is mostly not being met. As stated in the EIS, width to depth ratios most always do not fit into local numbers on the Kootenai. These stream dimensions were calculated for streams on the Oregon and Washington coast. The numbers are therefore an indicator of the dimensions of streams in the area. Pool frequency was an RMO that was not met in most cases in the project area. Streams are still recovering from past activities and natural events. Large fires have influenced Cripple Horse Creek and Canyon Creek. Past grazing on Cripple Horse, Canyon, Warland and Five Mile have caused riparian problems. Past Forest Service fisheries habitat enhancement where wood was removed from stream channels has been wide spread across the area. Implementation of INFS into the Kootenai National Forest Plan in 1995 created a set of RHCAs to protect the riparian area and improve or protect key fisheries habitat elements. These elements were based on best scientific data that showed intact riparian areas led to healthier aquatic ecosystems. RHCAs have been monitored since implementation of INFS and have showed through protection streams have maintained or trended towards more natural states. This project will require all streams and wetlands buffered by RHCAs. Therefore, the existing condition will maintain or improve conditions. Since this is the language set in the Forest Plan this project will be consistent with INFS and will not retard the attainment of RMOs.

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Comment: In its overly narrow analyses of cumulative effects of past management activities, the DEIS does not provide adequate summaries of the purpose and need statements from past NEPA documents, the level of achievement of their desired conditions and/or project goals, results of required monitoring, nor the consistency of past project with resource conditions as expressed in the desired condition and purpose and need statements.

Response: The proposed project utilized past information from the turn of the century through dam construction to present conditions. Past management was consistent with direction and laws of that time. Recent management since

1995 has been consistent with INFS and is therefore consistent with the KNF Forest Plan. The project will also be constant will all other State and Federal laws.

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GRIZZLY BEARS

Comment: The DEIS indicates that a portion of the ER PA lies within the Tobacco BORZ (occupied grizzly bear habitat outside the Cabinet-Yaak Grizzly Recovery Zone). The analysis of the impacts of the action alternatives on grizzly bears that may be present in the BORZ utilizes the language and rationale that have become standard for assessing the impacts of road construction, reconstruction and the use of roads within the BORZ for hauling timber as well as other activities associated with the implementation of logging and other actions proposed in the action alternatives for the ER Project. While acknowledging that these activities have the potential to disturb and displace bears from preferred (or at least currently usable) habitat in the PA, the Forest Service relies on stipulations in the latest (2011) revision of the Grizzly Bear Motorized Access Management Amendment to the KNF, IPNF and Lolo Forest Plans.

Response: The East Reservoir Project is consistent with the biological opinion for the 2011 Forest Plan Amendments for Motorized Access Management within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones, and associated BORZ.

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Comment: In regard to BORZ the 2011 Access Management documents basically require only that open and total road densities not be permanently increased as a result of a project. Thus they can be increased, which they will be as a result of either Alt. 2 or 3 in this case, during the multi-year implementation of the project, as long as they are returned to pre-project levels by the time the project is completed.

Response: This statement is correct concerning temporary increases in linear open and total roads during project activities. However, these roads must remain closed to the general public.

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Comment: The fact remains that any bears that may be present in the ER PA will be adversely impacted by new road construction, the use of new and existing roads for log hauling, the presence of humans and machinery needed to accomplish the proposed extensive logging and the use of helicopters for wildlife and fuels reduction burns which will affect thousands of acres in the ER PA, including in the BORZ. These impacts have not been adequately disclosed, analyzed or addressed in the DEIS.

Response: These potential impacts were disclosed in the DEIS, biological assessment, as well as clarifying emails, and subsequently concurred with by U.S. Fish and Wildlife Service in their letter of concurrence dated, August 8, 2013. The potential exists to displace grizzly bears to areas not affected by the activities, but these projects are not expected to contribute cumulatively to bear mortalities given that no new permanent open roads would be constructed within the PSU and the project's compliance with the 2011 BO on Forest Plan Amendments for Motorized Access Management within the Selkirk and Cabinet-Yaak Recovery Zones on the Kootenai, Idaho Panhandle and Lolo National Forests. Additionally, the action alternatives, in combination with the baseline conditions and reasonably foreseeable projects would improve the overall ungulate security habitat, as defined by Hillis et al. 1991, from 28% to 35 or 33%. This increase in ungulate security can easily be translated to an increase security for any grizzly bears moving through or utilizing, at least intermittently, the PSU. Additionally, helicopter use associated with the this project is consistent with the management strategies found in the Guide to Effects Analysis of Helicopter Use in Grizzly Bear Habitat (2009) that are not likely to adversely affect grizzly bears; helicopter activities would not prohibit bears from using the area during any period of biological importance such as breeding, late fall foraging (hyperphagia), or denning.

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Letter 4: United States Environmental Protection Agency

Comment: The Draft EIS states that under Alternative 2 (proposed action) and Alternative 3, there would be timber harvest, skid trail construction, temporary road construction, new road construction, upgrades to stream crossings, prescribed fire, and fuels and wildlife treatments. We appreciate the map depicting wetlands and the incorporation of design criteria, BMPs and RHCA guidelines are anticipated to minimize potential risks to water quality from the aforementioned activities.

The Draft EIS describes monitoring measures and includes a monitoring plan as an appendix. The latter indicates the monitoring during implementation of activities will occur. The Draft EIS also states that a number of the actions in the project will have short term impacts on streams. It would be helpful if the Final EIS linked how the monitoring during activity implementation will be used to minimize the impacts to streams. For instance, if an issue is found through the monitoring while an activity is being implemented, there are actions that will be taken to change the activity and minimize the impact. Including the list of actions in the Final EIS would provide a link between the monitoring and minimizing the impact.

Response: Short-term impacts to water resources will be minimized because the PFIs are within the allowable
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range, basin-wide ECAs are less than 30%, project implementation will occur over a 10 year time-frame, and design criteria will be implemented to ensure water quality standards are being met.

During implementation, design criteria and BMPs become part of the contract (See Appendix C). At that point it is the responsibility of the timber sale administrator, harvest inspector, engineering representative, or contracting officer representative to ensure operations comply with the contract and thus law, regulation, and policy. If resource concerns are identified, actions are modified or stopped until they are corrected. Monitoring by both the Forest Service and the State of Montana has shown that the Kootenai has had a very good record of BMP implementation and effectiveness (Appendix D).

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Comment: We are appreciate that all prescribed burning would be carried out under the oversight of Montana/Idaho State Airshed group and will comply with the current Federal and state management plans including the State Implementation Plan and Smoke Management Plan. It is known that smoke from fire contains air pollutants, including particulates (PM_{10} and $PM_{2.5}$) which can cause health problems, especially for people suffering from respiratory illness such as asthma, emphysema, or heart problems. The Draft EIS indicates that at the beginning of each burn season an advertisement informing the public of potential prescribed burns will be placed in a local paper. The Draft EIS further states that residents near a prescribed burn may be contacted prior to the burn. We recommend the Final EIS include a commitment to notify the public closer to pending burns. This is especially important for the residents downwind of the burn area.

Table 3.115 provides a range of particulate emissions factors (PM_{10} and $PM_{2.5}$) by burn type and alternative. The text provides an example of the range of PM_{10} and $PM_{2.5}$ from a 40 acre underburn. The text also indicates that there is expected to be 300-2,000 acres of prescribed burn each year. In order for the maximum impact of these burns to be understood, we recommend the Final EIS include: (I) the total estimated project emissions over the life for the project, and (2) the potential estimated yearly highest PM_{10} and $PM_{2.5}$ for the three alternatives using the "underburn timber harvest units" which has the highest PM_{10} and $PM_{2.5}$; emissions per acre. For instance, using the information provided in text and tables, the maximum yearly PM_{10} under alternative 2 is:

2774 pounds PM_{10}/acres x 2,000 acres = 2774 tons per year.

We recognize that this assumes all 2,000 acres would be this burn type which may not be likely; however, it also informs the public of the worst case anticipated emissions. It would also be useful to disclose the largest likely area to be burned during a single event and how long such an event may last so the decision maker and public can understand short term (24-hour) impacts.

The Draft EIS includes a general discussion of cumulative air quality effects. Regional air quality data is available through Montana Department of Environmental Quality. In order to understand the cumulative impacts of the activities under the proposed alternative, the EPA recommends the Final EIS include the data on the current regional air quality and a more detailed analysis on cumulative air quality impacts.

Response: If smoke from prescribed burning has the potential to impact members of the public that are near the project, they will be contacted by prescribed fire managers prior to implementation of the prescribed burn.

In regards to question related to Table 3.115:

1) Table 3.115 provides all the necessary information needed to simply calculate the total project emissions over the life of the project or any other desired combination of potential burning.
2) The range of acres to be prescribed burned each year reflects the variability in burn windows and treatments units readily available. Under the worst case scenario in regards to emissions the highest year of burning will include about 300 acres of underburning timber harvest units, 1500 acres of underburning fuels and wildlife units, and 200 acres of grapple pile burning. This will not vary between Alternative 2 and Alternative 3 and Alternative 1 only has 765 acres of burning proposed. As requested, the worst case calculations are below and apply to both alternatives.

1500 acres of fuels and wildlife burning could generate 625 tons of PM_{10} and 530 tons of $PM_{2.5}$ emissions; 300 acres of timber harvest underburning could generate 416 tons of PM_{10} and 353 tons of $PM_{2.5}$ emissions; 200 acres of pile burning could generate 161 tons of PM_{10} and 137 tons of $PM_{2.5}$ emissions. Under the worst case scenario there could be a total of 1202 tons of PM_{10} and 1020 tons of $PM_{2.5}$ emissions generated in a year. These will be spread out over the course of the prescribed burning season which occurs mostly in March-June and September-November. The 1,500 acres of fuels and wildlife burning is the single largest prescribed burning event that will ever occur under this project. Due to the nature of the fuels in wildlife units and the time of year that these types of burns occur, the smoke impacts will be greatest for the first few days following a burn and residual smoldering and creeping could last for a few weeks.

A more detailed analysis of cumulative impacts to air quality is not possible due to the inability to determine the exact time and place of all local, zone, and regional prescribed burning. The entire purpose of the Montana/Idaho Airshed Group is to coordinate prescribed burning activities with the Montana Department of Environmental Quality to ensure their will not be short-term or cumulative impacts that exceed any NAAQS. In addition, the project will comply with the State Implementation Plan as is required by the 1987 Forest Plan.

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Comment: Information on current and project climate change impacts are included in the Vegetation Resource section of Chapter 3 includes as well as mentioned in several other Chapter 3 sections. We recognize that inclusion of climate change as related to forest health and the proposed project is important. We recommend the discussion is expanded to include how the USFS can reduce the impacts of project activities on climate change, monitor for effects of climate change on forest resources, and include a project specific analysis and disclosure of greenhouse gas (GHG) emissions. To achieve this, the EPA suggests a four-step approach:

1. Quantify and disclose estimated annual and total project lifetime cumulative GHG emissions in CO_2 equivalent terms and translate the emissions into equivalencies that are easily understood from the public standpoint (e.g., annual GHO emissions from x numbers of project equipment; see, https:1/www.eoa.gov/RDEE/energy-resourcescalculator.html).
2. Qualitatively discuss the link between GHGs and climate change, in addition to the potential impacts of climate change.
3. Include a summary of ongoing and projected regional climate change impacts relevant to the project area based on U.S. Global Change Research Program assessments.
4. Identify and analyze reasonable alternatives and/or way to mitigate project-related GHG emissions.

Response: The importance of carbon storage capacity of the world's forests is tied to their role globally in removing atmospheric carbon that is contributing to ongoing global warming. As discussed in Forest Carbon Cycling and Storage Report (PF, Vol. S, Doc. 29), meaningful and relevant conclusions on the effects of a relatively minor land management action such as this on global greenhouse gas emissions or global climate change is neither possible nor warranted in this case. Nevertheless, we recognize that global research indicates the world's climate is warming and that most of the observed 20th century increase in global average temperatures is very likely due to increased human-caused greenhouse gas emissions.

Forests cycle carbon. They are in a continual flux, both emitting carbon into the atmosphere and removing it (sequestration) through photosynthesis. The proposed actions being considered here may alter the rates and timing of that flux within the individually affected forest stands. These changes would be localized and infinitesimal in relation to the role the world's forests play in ameliorating climate change and indistinguishable from the affects of not taking the action.

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Comment: The East Reservoir Project lies within 20 miles of the WR Grace Vermiculite mine. Based on current data from the Libby Superfund Site, there is the potential for asbestos related impacts in the project area. Although the risk from asbestos in the area is not yet quantified, we suggest that the Final EIS include: (1) a discussion of possible asbestos in the project area contamination; and (2) the potential impacts of such contamination, especially as they relate to workers' health for the cutting and burning projects included in the preferred alternative. Additionally, it is important that the Final EIS include mitigation measures that would be employed to avoid identified potential impacts.

Response: Based on EPA sampling of tree bark and duff, asbestos has been detected near the western boundary of the East Reservoir project area which is outside of any EPA Operable Unit (OU - The EPA has divided the entire Libby Superfund into 8 Operable Units that include specific areas and task associated with the cleanup) within the Libby Superfund Site. Due to the very limited amount of sampling conducted by the EPA, the nature and extent of asbestos contamination in the project area is not known at this time.

EPA is the lead agency on determining the toxicity of Libby Amphibole asbestos and developing a risk assessment. As such, the Forest Service has requested additional guidance and risk information from the EPA. Current EPA timelines estimates indicate that a final risk assessment for the Libby Superfund will be available in 2014. Once that information becomes available the Forest Service will 1) evaluate the information, 2) determine whether there will be potential impacts to workers implementing the project, and 3) implement mitigation measures that may be necessary to address potential impacts.

To date, all personal air monitoring from activity based sampling conducted by the EPA and sampling conducted by national Institute for Occupational Safety and Health (NIOSH) has indicated that all results were well below the Occupational Safety and Health Administration (OSHA) asbestos standard of 0.1 fibers per cubic centimeter of air as an 8-hr time-weighted average. This is currently the only regulation regarding worker permissible exposure limits to asbestos. In October of 2013, NIOSH will present their findings from personal air monitoring that occurred during

forest management activities in OU3 (Superfund Operational Unit) and OU4 during the 2012 field season. The Forest Service has also received results from personal air monitoring that occurred during a wildland fire event in July of 2013 near the Souse Gulch area of OU3. If additional findings from ongoing data collection and findings from the EPA final risk assessment indicate the need for mitigation during forest management activities in the East Reservoir project area the Forest Service will implement the appropriate environmental or engineering controls to protect worker health. In the interim, the Forest Service will continue to coordinate with the EPA to do additional activity based sampling. For more info: http://www.latag.org/index.php/superfund-site/operable-units

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Letter 5: Bettge and Pittsley – Warland Creek Land Owners

Comment: We very much support what seems to be the best alternative: alternative 2. It provides good forest management practices and facilitates some economic return to the local area through selected logging. It also provides employment through hiring to selectively thin the forest. It does not overemphasize clear-cutting and not only respects viewsheds, but from our reading of the plan, actually enhances some views along Hwy 37 to better enjoy the scenery and reservoir.

We are especially pleased to see improvements (with shelter wood) to areas near Warland creek to reduce fire risk. This is a major concern for all who live in the area. Besides decreasing fire risk, wildlife habitat will be improved. The plan respects fragile soils through scheduling work in appropriate times of the year. Concern for noxious weed spread is a concern; logging trucks have contaminated the Warland area with knapweed over the years, and we are struggling to contain it through the use of knapweed beetles. Reading that containing noxious weeds is a part of the plan is gratifying.

Response: Thank you for your comments and interest in the east Reservoir Project.

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Comment: We do wish to comment that we do not favor clearcuts, per se, unless they are structured to allow wildlife use (ie. not > 600' across, and 300' widths preferred). Clearcuts generally mar the landscape, increase soil temperatures and allow erosion to occur. In Alternative 2, several clearcuts/regeneration units are planned. As best we can read the plan, some of these cuts include tree reserves. If the reserve trees are positioned to allow for a mosaic appearance of the clearcut, we have no objection to the clearcuts. A mosaic approach would still allow wildlife use and maintain a better visual aspect. If the cuts are of the rectangular, hard-edged, complete clearcuts, we object. This approach may be easier to accomplish, but is detrimental to too many other factors in the plan. On pages S-2, p.3, chapter 2 and page 20 of the plan, several nonconformities are discussed. We think they could be mitigated through more thoughtful layouts. Shaping a clearcut to be long and narrow, and including reserve or shelter trees is what we would favor. Hard edges create a more highly detectable clear cut; "shading" the edges and including stands of shelterwood could make the clearcuts less objectionable. We do not believe the reasons and necessity to establish clearcuts and regeneration units have been clearly articulated within the plan.

Response: The DEIS explains regeneration harvests, specifically clearcuts in Chapter 2 on page 9 and 10. The following information is explained:

Regeneration harvest treatment is intended to replace a forest stand when modification treatments (i.e. intermediate harvest) are not feasible due to poor quality trees for retention; stand is under stocked due past insect and disease mortality; or incorrect overstory species that will not meet management objectives. In this analysis area, regeneration is proposed in some stands to promote regeneration of seral, fire-tolerant species. Specifically, regeneration harvest is needed to restore western larch, ponderosa pine and western white pine. Within proposed harvest units, there will be both live and dead trees that are designated for reserve. The number of trees left and the associated stand structure is described by the varying regeneration harvest methods proposed. A description of these methods follows.

Clearcut with reserves also initiates establishment of a new stand. An average of 4 to 8 trees per acre will remain on site post-treatment and their function will be as snags, cavity habitat, or replacement snags. Clearcuts are typically planted by hand, or may be reseeded by adjacent mature stands if desirable trees are present.

Each of the treatment units have been reviewed by a wildlife biologist and a visuals specialist. All of the acres prescribed for clearcuts are clearcuts with reserve trees. All of these clearcut will have reserve trees ranging from a minimum of 6 trees per acre to 12 or more for replacement snags and structural diversity. In addition, all snags that meet minimum snag criteria will be left in clearcut reserve treatment with areas. Units that have additional concerns from the wildlife and visual specialists have been addressed and have specific objectives to address them. For example, some clearcuts have more snag replacements required for leave due to the habitat or more reserve trees for visuals.

Specific marking guides for each treatment unit will be developed during project implementation.
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Clearcut shape is often determined by a number of the following variables such as SMZ boundaries; potential timber stand concerns such as plant pathogens and entomological concerns; fire concerns where high fuel loads may exist; steep slopes; and harvest procedures.

Regarding Soil Damage: Application of appropriate management precautions (BMPs) such as avoiding timber harvest in wet seasons, maintaining buffer zones below open slopes, and skidding over snow or frozen grounds will decrease potential negative impacts to soil productivity regardless of timber harvest activities.

Regarding Soil Temperatures: The potential for soil temperatures is minimized by maintaining a duff layer on the surface. Furthermore, the burn prescriptions for this project were designed for low to moderate fire intensity and will be implemented when soil moisture levels are high. Typically, burning prescription is scheduled when the moisture in the lower duff layer is high enough so that the fire does not consume those layers which insulate the soil surface from surface heating (DeBano 2000).

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Comment: Highway 37 is a very popular highway for the public, especially during the summer months. Doing everything possible to not only maintain, but enhance views along this highway is critical. As the economy of the area continues to struggle, encouraging recreational tourism by presenting the tremendously scenic views available along the highway would benefit the area greatly. Thinning trees along the highway and preserving wooded mountain views should be a very important aspect of the plan.

Response: The Forest Service is in full agreement with your assessment. Forest Plan visual quality objectives (VQO) are established for views from sensitive travel corridors (MSH 37, trails, etc.) and use areas (Lake Koocanusa, campgrounds, etc.). A Forest Service paraprofessional landscape architect assesses each proposed activity as to whether the assigned VQO will be met. If a VQO will not be met, then mitigation measures are designed to bring that proposed activity into Forest Plan compliance. Additionally, the Forest Service creates and maintains scenic turnouts along MSH 37 through the project area.

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Letter 6: The Lands Council

The Lands Council is part of the Kootenai Forest Stakeholder Coalition and I attended on field trip to the area last year with members of the coalition.

Comment: The stated Purpose and Need is to:

Re-establish, restore and retain landscapes that are more resistant and resilient to disturbance (insect and disease infestations, fire) and uncertain environmental conditions such as climate change;

Create a heterogeneous landscape that provides a variety of habitats to sustain populations of terrestrial and aquatic species;

Provide amenities, jobs and products to the communities;

Reduce hazardous fuels adjacent to private property and across the landscape while re-introducing fire to the ecosystem;

Enhance recreation settings and facilities with the goal of providing high quality experiences.

We generally support these goals, particularly in the suitable timber base and appreciate all the work that has gone into the project. One of our big concerns is the protection and recruitment of old growth. From looking at the ERP Map 2, there is an extensive road system and past harvest history. What is not apparent on that map is where the old growth stands and wildlife corridors are located - the old growth is on a separate map and hard to overlay. Is it possible to identify where the recruitment of old growth will be located that will allow an increase to a historic range?

Response: While areas designated as old growth are not currently optimal, these areas are very well connected as demonstrated by the amount of cover disclosed under the analysis for large ungulates (i.e. elk, deer, etc.) as well as grizzly bear. Current cover levels on National Forest and US Army Corp. of Engineer lands exceeds 80% of the analysis area.

Recognition of the need and desire for a variety of habitats for wildlife, including old growth, is demonstrated by the first two statements under the purpose and need for the proposed action. The amount and distribution of old growth is monitored annually and documented in the annual Forest Plan Monitoring Report. These reports are available on the Kootenai National Forest website. The KNF is currently meeting old growth standards set by the 1987 Forest Plan.

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Comment: Early on in the project Deena Shotzberger from the District had created an overlay of wildlife corridors and future treatments in this area, which was a real positive move on the part of District, but this does not seem to be present anymore? One of our goals is to provide adequate wildlife habitat and connectors and another goal is to know what the plans for this area are over time. We would like to see this discussion and mapping in the Final EIS, as it will allow us to better understand the current and future impacts on wildlife.
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Response: While areas designated as old growth are not currently optimal, these areas are very well connected as demonstrated by the amount of cover disclosed under the analysis for large ungulates (i.e. elk, deer, etc.) as well as grizzly bear. Current cover levels on National Forest and US Army Corp. of Engineer lands exceeds 80% of the analysis area. The District's position on the working map created by Shotzberger is that it served as a catalyst for long-term thinking or planning for managing forest connectivity using forest layers currently available (e.g. INFISH, designated lynx habitat, as well as existing old growth stands) to visually display connecting habitats. Shotzberger's map was only a draft working copy and had not received additional input from other resources specialist during its creation. For these reasons, this working corridor map will not be included in the FEIS for the East Reservoir Project.

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Comment: We also have a concern about the size of the units, and their prescriptions. It could be taken that there are very large clearcuts, adjacent to older large clearcuts. But if this is not the case, a detailed description of how the units will be harvested would be beneficial. As the USFS moves toward treating larger areas to restore historic patch size for the long term, will they be incorporating leave islands for short-term habitat security needs.

Comment: A more detailed discussion of the methodology that led to the large patch sizes would also be useful. Our understanding of the science is that patch sizes ranged from less than an acre to tens of thousands of acres, depending on intensity of disturbances such as fires, windthrow and insects. A discussion of how logging would not only accomplish the same objectives as natural disturbance, but also vary from those objectives would also be useful - and a discussion of how fire suppression will impact the stands now and into the future.

Response: The proposed action for the East Reservoir Project would create forest openings larger than 40 acres in size through the use of even-aged regeneration methods. Specifically, these larger openings are needed in order to:

- Trend the landscape towards a more desirable pattern of patch sizes that mimics natural processes and restores historical patterns of patch size (DEIS, pp.23-25; Vegetation Report, Desired Condition, VRU 4,5 and 7).
- Create a pattern of fuel treatments at a landscape scale that is likely to disrupt large fire growth and spread and assist in the efficacy of suppression efforts.Design fuel treatments to provide a fuel break immediately adjacent to a major power transmission line (DEIS, Fire and Fuels Report, p.182).
- Create openings that reduce edge effect and reduce fragmentation, which can result from more numerous treatment areas and still achieve the same objectives (DEIS, Wildlife Report, p. 224, 301 and 308).

With past harvest activities, forage patches have become more uniform in size (30-40 acres) and shape. The existing condition, for the most part, is not representative of reference conditions. Past timber harvests have noticeably influenced the juxtaposition of wildlife cover and forage. Harvests have unnaturally affected "edge" habitats as well as interior habitats, the greatest impacts likely being on those species associated with large expanses of interior habitats (DEIS, Chapter1, p. 4).

This disturbance regime (30-40 acre) provides suitable habitat for species that are adapted to the edges between forested and non-forested areas. However, species that require larger blocks of habitat are at a disadvantage under such a disturbance regime (DEIS, p.S-2). The majority of the past harvest within this area on NFS lands has fragmented the landscape due to the 40 acre opening limitation (DEIS, Chapter 3, p. 24).

Four of the regeneration harvests (Units 62, 40, 150 and 362) are proposed as over 40 acre regeneration, but do not mimic the large historic patch size of 5,000 to 100,000 acres. However, Units 62, 40 and 150 are placed adjacent to past harvest that are recovered, but are within the early-successional stage. By these units being blocked up with other early-successional stages, this larger block mimics historic conditions and would move into the future as a connected patch of interior forest (DEIS, Vegetation Report, p. 45, 46, 47).

Additionally, Units 147, 148, 149 and 150 in Upper Fivemile Creek and Unit 170 in Warland Creek were designed to tie in with past regeneration harvests to simulate a fire that would have burned from the creek bottom to the ridge top due to continuous fuels and favorable topography. This would have been more typical of historic patch size and bum pattern when strategically located directly adjacent to existing regeneration harvests that are still an effective barrier to high fire spread rates. Treatments of this scale are also more likely to disrupt large fire growth and spread, and assist in the efficacy of suppression efforts when a fire occurs in these areas. Fire modeling indicates these areas are at risk of experiencing stand-replacing crown fire behavior if left untreated and both areas are within 1 ¼ miles of private property. In addition to the benefits described previously, Unit 362 near Hornet Ridge (Dunn Creek) was partially designed to provide a fuel break immediately adjacent to a major power transmission line.

For wildlife, creating openings over 40 acres better approximates the patch size and pattern of habitat that would have been available under natural disturbance processes and reduces edge effect and fragmentation that would occur with a greater number of openings of lesser acreage. Additionally, stringers and groups of trees would be left within the units to provide screening and minimize the effect of the openings when possible. There may be short-term disturbances within identified big game travel corridors due to project related activities (DEIS, pp. 224, 301, 308). Therefore, with the implementation of an action alternative, Alternative 2, which promotes large patch size, would benefit wildlife by addressing the issues of edge effect, fragmentation, and interior forests better than Alternative 3 which limits regeneration harvest units to 40 acres or less.

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Comment: As always we are concerned about past and future impacts on soil productivity and how the project will comply with regional soil standards.

Response: The 15% threshold is based on research by Powers (1990). In order to meet NFMA direction and manage National Forest System lands without permanent impairment, the policy of the Northern Region is to "…not create detrimental soil disturbance on more than 15 percent of an activity area" (FSM, 2554.03). In areas where more than 15% detrimental soil conditions exist from prior harvest activities, the cumulative detrimental effects from project implementation and restoration should not exceed the conditions prior to the planned activity and should move towards a net soil improvement.

Units found to cumulatively exceed the 15% DSD value on one or more of the proposed activities will undergo restoration activities as defined in R1 Supplement 2500-99-1 (effective 11/12/1999) – Restoration - Treatments that restore vital soil functions to their inherent range of variability. It is recognized that treatments may not occur over a period of years and may need to be maintained. Restoration treatments could include, but are not limited to, tilling, ripping, seeding, mulching, recontouring of temporary roads and water barring. Such activities will help to offset the harvest activities to soil productivity by allowing previously disturbed soils to re-establish as a productive area capable of producing future natural vegetative cover.

Finally, application of appropriate management precautions (BMP's) such as: 1) excluding RHCAs from equipment entry; 2) use existing skid trails and landings where feasible; 3) avoid skidding on unstable slopes; 4) space skid trails 75 to 125 feet apart; 5) avoiding timber harvest in wet seasons, maintaining buffer zones below open slopes, and limit logging to dry conditions (less than 18% soil moisture) or during winter months when the ground is frozen; and 6) controlling erosion during and after harvest activities to protect water quality and soil productivity will decrease potential negative impacts regardless of timber harvest activities.

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Letter 7: Alliance for the Wild Rockies

Comment: Does the Forest Service have a take permit for having low level helicopter flights over grizzly bear habitat?

Response: A take permit is not necessary due to a finding of "not likely to adversely affect," for the grizzly bear. These potential impacts were disclosed in the DEIS, biological assessment, as well as clarifying emails, and subsequently concurred with by U.S. Fish and Wildlife Service in their letter of concurrence dated, August 8, 2013. Helicopter use for prescribed burning will be limited to one, eight hour day for implementing one burn unit per year or as burning windows (weather) allows. In this situation, it may be several years between burns. This approach is consistent with the Guide to Effects Analysis of Helicopter Use in Grizzly Bear Habitat (2009).

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Comment: The Access Amendments facially and as applied by this project violate NFMA, NEPA, and the ESA. They fail to apply the best available science, fail to ensure no jeopardy to the already failing grizzly population, fail to ensure recovery, fail to ensure viability of the CY grizzly, fail to consider whether the Recovery Zone should be expanded to do these things, and fail to consider applying the same standards to the BORZ as those applied in the Recovery Zone to do these things, and fail to consider the probable potential and effect of likely noncompliance with even the minimal inadequate standards in the Access Amendments, as illustrated in this project. This project likewise fails to do all of the above and thus violates NFMA, NEPA, and the ESA.

Response: These potential impacts and finding of "not likely to adversely affect," the grizzly bear were disclosed in the DEIS, biological assessment, as well as clarifying emails, and subsequently concurred with by U.S. Fish and Wildlife Service in their letter of concurrence dated, August 8, 2013. The application of recovery zone standards for BORZ is outside the scope of this site-specific project.

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Comments:

1. Please provide a map showing the WUI and the locations of all homes in comparison to the project area.

Response: A copy of the Community Wildfire Protection Plan is contained within the project file. The CWPP
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contains a map of the WUI and population densities. As stated in Chapter 3 page176, homes exist in Fivemile Creek, Warland Creek, Dunn Creek, between Boundary and Canyon Creek, and between Canyon Creek and Dunn Creek. Specific landownership records and details on structures can be found on the following website. http://svc.mt.gov/msl/mtcadastral/

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2. Will the Forest Service be considering binding legal standards for noxious weeds in its revision of the Kootenai Forest Plan?

Response: The revision of the Kootenai Forest Plan is outside of the scope of the East Reservoir project analysis. Please refer to information on the revision at: http://www.fs.usda.gov/main/kootenai/landmanagement/planning

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3. How effective have BMPs been at stopping (i.e. preventing) new weed infestations from starting during logging and related road operations?

Response: (ER DEIS pgs. 344-346) The BMPs identified for noxious weed management are found on the cited pages. The KNF Invasive Plant Management FEIS states: "reduction in weed dispersal as a result of BMPs is also not quantifiable. It is highly like that BMP measures such as equipment washing and seeding of disturbed sites have reduced the rate of spread of noxious weeds (KNFIPMFEIS pgs. 3-13, 3-15-18). The Kootenai National Forest Plan Monitoring and Evaluation Report from 2007 (pgs. 53-62) also documents monitoring of weed management efforts.

The Libby District also maintains specific monitoring records that demonstrate the effectiveness of the measures used to control the establishment and spread of noxious weeds. These records include: Herbicide Treatment Data Records, photo records and roadside surveys.

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4. Is it true that new roads are the number one cause of new noxious weed infestations?

Response: "The Chief of the USDA Forest Service has identified invasive species as one of the four critical threats to our Nation's ecosystems. In response to this national threat, we have evaluated the role of the Forest Service as a leading forest research, forest health, and Federal resource management agency. We are aware of our significant role in addressing invasive species threats at the local, state, and national levels, as well as internationally. We have found the best opportunity for success comes from working strategically, using all our scientific, management, and partnership resources in unison" (http://www.fs.fed.us/invasivespecies/ index.shtml). (ER DEIS pgs. 324-325)

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5. Why isn't the Forest Service considering a Forest Plan amendment in this Project to amend the Forest Plan to include binding legal standards that address noxious weeds?

Response: (ER DEIS pgs. 324-325 and 346-347) Direction for noxious weed management comes from the KNF Plan, the 2007 KNF Invasive Plant Management FEIS and ROD, Forest Service Manual 2080 Noxious Weed Management and FSM 2900 Invasive Species Management. These documents provide the direction and measures used for reducing the effects of noxious weeds within the project area. In addition, the management measures identified within DEIS will be compliant with the Lincoln County Weed Control Act (MCA 7-22-2116) and a Memorandum of Understanding between the KNF and Lincoln County.

Only site-specific Forest Plan amendments can be made within project specific NEPA. A Forest Plan amendment applicable across the Forest cannot be implemented within project specific NEPA as that would require analysis at the Forest scale, rather than the project scale. Therefore, it would not be appropriate or feasible to analyze a Forest Plan amendment for noxious weeds in this project.

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6. Is it true that noxious weeds are one of the top threats to biodiversity on our National Forests?

Response: "The Chief of the USDA Forest Service has identified invasive species as one of the four critical threats to our Nation's ecosystems. In response to this national threat, we have evaluated the role of the Forest Service as a leading forest research, forest health, and Federal resource management agency. We are aware of our significant role in addressing invasive species threats at the local, state, and national levels, as well as internationally. We have found the best opportunity for success comes from working strategically, using all our scientific, management, and partnership resources in unison" (http://www.fs.fed.us/invasivespecies/index.shtml) (ER DEIS pgs. 324-325).

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7. How can the Forest Service be complying with NFMA's requirement to maintain biodiversity if it has no legal standards that address noxious weeds?

Response: (ERDEIS pgs. 324-325, 346-347) The ER DEIS discloses direction for noxious weed management as described under the response to Question 4. The KNFIPMFEIS (pgs. 1-13, 14) also describes policy in regards to noxious weed management and its relationship to NFMA. Efforts to prevent or limit introduction and spread of weeds are intended to maintain the biodiversity of native species.

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8. Will this Project address all Project area BMP needs, i.e. will the BMP road maintenance backlog and needs from this Project all be met by this Project?

Response: The DEIS discloses the miles of road BMPs in Table 3.121 on page 3-402 that could be addressed with this project. BMPs are proven practices that reduce the effects roads have on watersheds, but they are not permanent remedies. BMPs need to be monitored and maintained as conditions change. BMP effectiveness monitoring has been conducted and is referenced in the DEIS on Pages 3-168 to 3-169. Monitoring data has shown that the current levels of BMP improvements and maintenance are protecting the streams within the project area (DEIS pgs. 3-166 to 3-168).

"KNF monitoring has shown that BMPs have been properly implemented 97% of the time and have been 95% effective in reducing and/or eliminating sedimentation (Appendix D). A list of BMPs, specific to this project, can be found in Appendix C." (DEIS Pages 3-167).

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9. What MIS did you find, how many and how did you look for these MIS?

Response: The potential MIS species for the analysis area are disclosed in the DEIS on page 221. MIS species known to be present are the bald eagle, elk, white-tailed deer, and pileated woodpecker. Eagles are surveyed for on an annual basis. One nesting territory or two individuals are known to the analysis area. Elk and white-tailed deer are seen routinely during field visits with number estimates generated by Montana Fish, Wildlife and Parks. Pileated woodpecker observations were documented during general field visits for various species habitats. At least one individual was documented with much feeding /cavity sign was observed in the analysis area.

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10. How will the decreased elk security and thermal cover affect wolverines? Please formally consult with the US FWS on the impact of this project on wolverines.

Response: The potential effects on wolverine due to decreases in canopy cover are disclosed in the DEIS beginning on page 315. Consultation for wolverine is being conducted at the Regional level at this time and not on site-specific projects due to the range of the species, generalized habitat associations, and the potential impacts of climate change on the species due to its affiliation with persistent snowfields.

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11. What evidence do you have that this logging and prescribed burning will make the forest healthier for fish and wildlife?

Response: The continued existence of native species populations as documented by local, state, and federal agencies associated with the analysis area. Associated science used to analyzed the potential effects of vegetation treatments are documented by individual species in the DEIS and available as part of the project file.

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12. What about the role of mixed severity and high severity fire – what are the benefits of those natural processes?

13. How have these processes (mixed and high severity fire) created the ecosystems we have today?

14. Over how many millennia have mixed and high severity fire have been occurring without human intervention?

Response: A detailed discussion of fire history and the role mixed severity and high fire severity fire regimes can be found in the Vegetation Resource section and the Fire and Fuels Management section of chapter 3 of the DEIS.

As discussed in chapter 3, the East Reservoir analysis area exhibited low, mixed, and high fire severities across the landscape. Historically, the influence of fire created a mosaic of stands with a variety of vegetation species, sizes, ages and structures, as well as variable patch sizes. Prior to European settlement of the western states, the landscapes of western Montana were largely characterized by the natural and Native American induced fire regime; influenced by varying moisture, temperature and vegetation composition. Mixed and high severity fire regimes were typically found in the following Vegetative Response Units (table 3.6 page 3-10): VRU 3 (22% of the planning area), VRU 4 (10%), VRU 5 (1%), VRU 7 (29%), and VRU 9 (13% of the area). These mixed to high severity fire regimes account for about 75% of the planning area. The role mixed and high fire severity regimes would have played in shaping the vegetation of the planning area is discussed in detail on pages 3-11 and 12, 3-18 to 3-27.

Proposed management activities are designed to fit within acceptable and manageable historic ranges (reference conditions) we have identified, and are designed to foster the processes and patterns that make up the ecosystem. Knowledge of historic conditions and natural disturbance processes, as described in the VRUs discussion can help clarify the types, extent and causes of ecosystem changes, and can help identify management objectives and restoration priorities (Brown 2004). It is hypothesized where community composition and structure occur within a historic range of conditions, the function of the landscape community will also be maintained within its historic range. It is important to note that function cannot be maintained by restoring the vegetation structure, composition and patch size without restoring fire on the landscape. No mechanical means alone can duplicate the unique ecological effects of wildland fire, such as soil heating, nutrient recycling, and the resulting effects to the community composition and structure (Kauffman 2004, pg. 880).

15. What beneficial ecological roles do beetles play?
Response: Please refer to page 14 – 16 of the DEIS for the beneficial ecological role of insects and disease or see below:

Most insects and diseases (pathogens) have integral functions in the forest ecosystem. They play a role in the fire ecology of northwestern Montana by creating areas of dead conifers that fuel large, stand replacing fires. In general, where fire is removed from the natural processes, stand density will increase, composition moves towards shade tolerant species, and the probability of insect and disease outbreaks increase as populations increase and stress increases (Waring and Schlensinger 1985).

Historically, the most conspicuous insects and diseases in the forest were bark beetles, defoliators, stem decays and root disease. Root disease commonly thinned the Douglas-fir and grand fir from early seral stands of white pine, ponderosa pine and western larch. The early seral species have a high level of resistance and were able to capitalize on this reduced competition. The fires of the 1890s, selective harvest, fire suppression and the introduction of white pine blister rust has removed much of the intolerant species and reduced the opportunity for early seral species to become naturally established in some root disease areas. Root disease can predispose trees to attack by insects such as bark beetles.

Mountain pine beetle (MPB) was a large mortality factor in the LPP forest, with periodic infestations on PP and white pines. Douglas-fir beetle periodically caused significant mortality in late seral stands with a large diameter Douglas-fir component. Stem decays were common in Douglas-fir, grand fir and subalpine fir.

The major insects and diseases found within the analysis area affecting forest composition, stand structure, and fuel loads are described later in this analysis. There are other active insects and diseases within the analysis area, but levels are generally low and not considered as threatening to forest composition or stand structure. Many of these agents found affect species composition, but are considered within the "normal range" of a natural process. A consideration of forest health emphasizes prevention as opposed to suppression as a management strategy for insects, pathogens and natural disturbances that are considered detrimental to resource production. This emphasis is made with recognition of their beneficial role with regard to resources and ecosystem functions.

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16. Can the forest survive without beetles?
Response: Insects and diseases (pathogens) have integral functions in the forest ecosystem. They play a role in the fire ecology of northwestern Montana by creating areas of dead conifers that fuel large, stand replacing fires. In general, where fire is removed from the natural processes, stand density would increase, composition moves towards shade tolerant species, and the probability of insect and disease outbreaks increase as populations increase and stress increases (Waring and Schlensinger 1985). Please refer to the DEIS (Ch. 3, pp. 14 – 16) for the beneficial ecological role of insects and disease.

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17. Will all WQLS streams in the project area have completed TMDLs before a decision is signed?
Response: As per verbal communication with Lisa Kusnierz, US EPA, a TMDL is not being developed for Cripple Horse Creek (WQLS) because it is not listed for sedimentation impairment but is listed for low flow alteration and substrate habitat alteration (pollution impairments) which do not require the development of a TMDL. However, the environmental causes of the low flow alteration and substrate habitat alternation will be addressed in a document.

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18. Why is logging that removes all/almost all trees considered regeneration (and not loss of existing forest), when a stand-replacing fire is considered loss of the forest (and not regeneration)?
Response: It is not clear if you are referring to language in the East Reservoir project or more general use of language by humans in casual situations. How language is used by humans and interpreted by humans is an interesting topic to ponder but it is likely highly dependent on their culture. For the East Reservoir Project, we are responsible to clearly disclose the prescription of the treatment areas so the public clearly understands what we are proposing. One of the types of treatments in East Reservoir is regeneration harvests.

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19. How will the project improve watershed health?
Response: The implementation of BMPs and road improvements; culvert upgrades, increased ditch relief culverts, surface water deflectors, drainage dips, etc. will benefit watershed health. Appropriately sized culverts will improve stream connectivity, stream function, hydraulic function, bedload transport, large woody debris transport, and aquatic organism migration. Improved and increased ditch relief culverts limit water flow concentration and can minimize erosion. Improved and increased road surface features can limit water flow concentration and minimize erosion. Appropriately sized culverts can enable aquatic organisms to migrate upstream and downstream.

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20. Will this project leave enough snags to follow the Forest Plan requirements and the requirements of sensitive old growth species such as flammulated owls and goshawks?

Response: Yes, the impact on snags is disclosed beginning on page 210 of the DEIS. Briefly, all proposed units in Alternatives 1, 2, 3 maintain at least 40% snag level. No alternative causes the Cripple PSU overall potential population level (PPL) to drop below the general forest 40% or riparian 60% primary cavity excavator PPL. This is consistent with Forest Plan standards.

Kootenai Forest Plan cavity habitat standard (40% PPL) in MAs 15 and 16 is met by maintaining at snag capability of at least 64.5% under all alternatives.

Kootenai Forest Plan cavity habitat standard in MA 10 is met by maintaining a snag capability of at least 93% under all alternatives. Alternatives 2 and 3 would not require a project-specific amendment to suspend the requirement to retain all existing cavity habitat in MA 10. All treatment units would be managed to meet the 40% minimum snag level.

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21. After snags are cut down for safety for OSHA requirements will there still be enough snags left for old growth sensitive species?

Response: Yes, the impact on snags is disclosed beginning in Chapter 3 on page 210 of the DEIS. Briefly, all proposed units in Alternatives 1, 2, 3 maintain at least 40% snag level. No alternative causes the Cripple PSU overall potential population level (PPL) to drop below the general forest 40% or riparian 60% primary cavity excavator PPL. This is consistent with Forest Plan standards.

Kootenai Forest Plan cavity habitat standard (40% PPL) in MAs 15 and 16 is met by maintaining at snag capability of at least 64.5% under all alternatives.

Kootenai Forest Plan cavity habitat standard in MA 10 is met by maintaining a snag capability of at least 93% under all alternatives. Alternatives 2and 3 would not require a project-specific amendment to suspend the requirement to retain all existing cavity habitat in MA 10. All treatment units would be managed to meet the 40% minimum snag level.

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22. Will this Project exacerbate existing noxious weed infestations and start new infestations?

Response: The effects of the proposal on noxious weeds are addressed within the DEIS (pgs. 324-347). Specific design criteria (management measures) are incorporated into the project to "reduce the spread of weeds in the East Reservoir analysis area and minimize the chance of introducing new species." (ER DEIS pgs. 344-345 and 31-33). These management practices are implemented to reduce the likelihood of starting new infestations and exacerbating existing infestations. Some of the measures, such as treating existing infestations on roads to be reconstructed, will not exacerbate but will reduce these populations.

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23. Do unlogged old growth forests store more carbon than the wood products that would be removed from the same forest in a logging operation?

24. What is the cumulative effect of National Forest logging on U.S. carbon stores? How many acres of National Forest lands are logged every year? How much carbon is lost by that logging?

Response: U.S. forests are a strong net carbon sink, absorbing more carbon than they emit (Houghton 2003; US EPA 2010, pg. 7-14). Private forestlands and NFS lands each sequester a net 101 Teragrams per year CO_2/year, with an additional 92 Teragrams CO_2 per year stored in products from private harvests compared to only about 3 Teragrams CO_2/year from harvest on NFS lands. Emissions from other disturbances such as fires, as well as corresponding area estimates of disturbance are also important, but the needed datasets are not yet available (Heath et al. 2011).

As described in Forest Carbon Cycling and Storage Report prepared for the East Reservoir Project (PF, Vol. S, Doc. 29), for at least the short-term, onsite carbon stocks will be lower under the action alternatives than under the no-action alternative. A portion of the carbon removed will remain stored for a period of time in wood products (USEPA 2010; Depro et al. 2008). Actions such as those proposed here may, in some cases, increase long-term carbon storage (Finkral and Evans 2008; North et al. 2009; Mitchell et al. 2009), but current research in this field shows highly variable and situational results (Mitchell et al. 2009; Reinhardt and Holsinger 2010; Ryan et al. 2010).

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25. Is this Project consistent with "research recommendations (Krankina and Harmon 2006) for protecting carbon gains against the potential impacts of future climate change? That study recommends "[i]ncreasing or maintaining the forest area by avoiding deforestation," and states that "protecting forest from logging or clearing offer immediate benefits via prevented emissions."

Response: The referenced literature, *Forest Management Strategies for Carbon Storage* (Krankina and Harmon 2006), was reviewed, particularly the section on "Protecting Carbon Gains against the Impacts of Future Climate Change". It was noted that the authors suggest several general measures they believe can increase the stability of forest in the changing environment, which align with the purpose and need to develop resilient forest conditions in the East Reservoir project area (DEIS, Chapter 1, pp. 4 to 6). These are:

> **"Choice of species**. In selecting species for planting at a given site it is important to consider their potential growth and resilience in a warmer climate, with possibly more frequent droughts and weather extremes. Drought resistance is probably the most important trait, as few trees die of excess temperature alone. Long-term resistance to fire, pests, and pathogens is also important as all may become more active. In addition to local pest and pathogen species, those likely to migrate from the south need to be considered as well.
> **Stand and landscape architecture** can be designed to increase resistance and resilience of forests. For example, avoiding extensive coverage by a single species and maintaining mixed species within stands and landscapes or creating fire breaks with reduced fuel loads tend to increase the stability of forests. Thinning treatments can improve stand stability as well.
> **Plans for coping** with large-scale disturbance events are needed to ensure optimal timing for salvage, regeneration, and other important decisions with long-lasting consequences (Lindenmayer *et al.*, 2004)." (p. 87)

As stated in the Forest Carbon Cycling and Storage Report prepared for the East Reservoir Project (PF, Vol. S, Doc. 29, p. 5):

> "As discussed elsewhere, the risk of some high mortality disturbance events is greater under the no action alternative. To the extent the proposed actions reduce the risk or delay the event of future stand replacing disturbance events, potential emissions from those events are equally reduced or forestalled.
>
> Sustaining forest productivity and other multiple-use goods and services requires that land managers balance multiple objectives. The long-term ability of forests to sequester carbon depends in part on their resilience to multiple stresses, including increasing probability of drought stress, high severity fires, and large scale insect outbreaks associated with projected climate change. Management actions, such as those proposed with this project, that maintain the vigor and long-term productivity of forests and reduce the likelihood of high severity fires and insect outbreaks can maintain the capacity of the forest to sequester carbon in the long-term. Thus, even though some management actions may in the near-term reduce total carbon stored below current levels, in the long-term they maintain the overall capacity of these stands to sequester carbon, while also contributing other multiple-use goods and services (Reinhardt and Holsinger 2010)."

The statement "protecting forest from logging or clearing offer immediate benefits via prevented omissions" is presented out of context. This is, in fact, just one of three general categories (listed below) the authors list as options available to mitigate carbon accumulation in the atmosphere by measures within the forest sector (p. 84). The activities proposed for the East Reservoir Project align with category two (in bold):

> "(1) Increasing or maintaining the forest area by avoiding deforestation. (2) Increasing carbon density (ton of carbon per hectare), either at the forest-stand level, using silvicultural techniques that accelerate forest regeneration and growth, or slow decomposition (Figure. 2), or at the landscape level, using longer rotations, conservation, and protection against fire and insects (Figure 4). (3) Increasing product substitution using forest-derived materials to replace materials with high fossil fuel requirements, and increasing the use of biomass-derived energy to substitute fossil fuels (Figure 3; see also Chapter 7)." (p. 84) (Emphasis added)

The role of the proposed project activities on carbon storage was considered using best available science.

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26. Please list each visual quality standard that applies to each unit and disclose whether each unit meets its respective visual quality standard. A failure to comply with visual quality Forest Plan standards violates NFMA.

Response: A Forest Service paraprofessional landscape architect has performed an assessment for each activity proposed in the East Reservoir EIS. Each activity assessment includes the Forest Plan visual quality objective (VQO), the VQO attained if the activity proceeds, and the rationale for the attained VQO. There are activities proposed in the East Reservoir DEIS where Forest Plan VQOs will not be attained. In these instances, the decision maker has decided that other resources will be compromised in order to meet the VQO. See Chapter 3 of the DEIS, page 365, Table 3.117 for the properties of each unit including visual quality objectives.

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27. For the visual quality standard analysis please define "ground vegetation," i.e. what age are the trees, "restablishes," "short-term," "longer term," and "revegetate."

Response: Here are the definitions requested for "visual quality standard analysis":

> **"ground vegetation"** ie. What is the age of trees – Trees on these soils/habitats/climates are usually 15-20 years of age when they become visually significant.

"reestablishes" – Grasses and forbs important in foreground views develop in 3-5 years after activities. Shrubs and tree regeneration important in middle ground views develop in 5-15 years. However, the ability of tree regeneration to soften lines or shapes does not occur until 15-20 years after activities.

"short-term" – This is the time frame for usually minor impacts to be mitigated, either naturally or through management activities. Short term impacts commonly exist for 0-5 years after activities.

'long-term" – This is the time frame for usually major impacts to be mitigated, mostly through natural processes. Long term impacts commonly exist for 5-15 years after activities.

"revegetate" – see discussion above on "reestablishes".

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28. Please disclose whether you have conducted surveys in the Project area for this Project for whitebark pine, wolverines, pine martins, northern goshawk and lynx, grizzly bears as required by the Forest Plan.

29. Please disclose the last time the Project area was surveyed for whitebark pine, wolverines, pine martins, northern goshawk, grizzly bears and lynx.

30. Please disclose how often the Project area has been surveyed for whitebark pine, wolverines, pine martins, northern goshawks, grizzly bears and lynx. Is it impossible for a wolverines, pine martins, northern goshawks, grizzly bears and lynx to inhabit the Project area?

31. Would the habitat be better for whitebark pine, wolverines, pine martins, northern goshawks, grizzly bears and lynx if roads were removed in the Project area?

Response: Surveys for northern goshawks were conducted in 2011 with a follow-up visit in 2012. Specific surveys for wolverines, lynx, and grizzly bears are not conducted by district personnel. These surveys occur out of the Northern Rocky Mountain Research Station, Montana, Fish, Wildlife and Parks, or by U.S. Fish and Wildlife personnel. Their findings are passed to the Libby District as needed. However, district personnel conducting routine field visits do document the presence of these species on occasion and the information is passed along to the District wildlife biologist.

The grizzly bear, lynx, and wolverine are suspected to be present in at least portions of the analysis area. The northern goshawk is known to be present.

For species with large home ranges such as grizzly bear, Canada lynx, and wolverine, areas with few or no roads are known to be beneficial as there would be fewer instances of human-species interactions.

Please see vegetation for discussion of impacts to whitebark pine. There is no Forest Plan direction for pine marten.

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32. What is the U.S. FWS position on the impacts of this Project on whitebark pine, wolverines, pine martins, northern goshawks, grizzly bears and lynx? Have you conducted ESA consultation?

Response: ESA consultation is only required on federally listed species. The pine marten and northern goshawk are not listed species and consultation for wolverine is conducted at the Regional level due to the species association with persistent snow cover. Consultation for grizzly bear and Canada lynx was conducted with a letter of concurrence for effects received on August 8, 2013 for this project. The finding for grizzly bears is that Alternatives 2 and 3 *may affect, are not likely to adversely affect the grizzly bear*. This determination is based on: 1) although the existing condition of the Tobacco BORZ is considered to have adverse effects on grizzly bears, the East Reservoir Project activities fall within the range-of-effects analyzed in the programmatic BO for the 2011 Forest Plan Amendments for Motorized Access Management within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones and therefore, in itself, is not likely to contribute to the loss of grizzly bears from the Tobacco BORZ; 2) helicopter use associated with the this project is consistent with the management strategies found in the Guide to Effects Analysis of Helicopter Use in Grizzly Bear Habitat (2009) that are not likely to adversely affect grizzly bears; helicopter activities would not prohibit bears from using the area during any period of biological importance such as breeding, late fall foraging (hyperphagia), or denning; 3) the East Reservoir Project does not change the livestock management of the Tobacco BORZ; 4) project activities would not result in an increase in food attractants and would comply with the 2011 KNF Food Storage Order; 5) the project would not result in measurable increases in recreation use of the Tobacco BORZ based on limited improvements; and 6) the project does not involve changes to any type of mining activities within the Tobacco BORZ and would not result in habitat fragmentation between grizzly bear ecosystems, SCYE and NCDE.

The determination for the Canada lynx found the action alternatives *may affect, are not likely to adversely affect the lynx* and *may affect, are not likely to adversely affect designated critical lynx habitat*. This determination is based on the facts that: 1) these alternatives of the East Reservoir DEIS comply with all standards, guidelines, and objectives of the Northern Rockies Lynx Management Direction Record of Decision and its activities fall within the scope of those analyzed in the subsequent Biological Opinion (2007), more specifically, the project would not result in habitat conditions that would cumulatively contribute to the low level of species loss estimated by the 2007 BO; 2)

these projects do not involve any activities that may result in increased areas of snow compaction, nor permanent loss of lynx habitat; and 3) although this project would temporarily affect the primary constituent sub-element, 'matrix' habitat and stem-exclusion stands, it meets ALL S1 standards, therefore maintaining habitat connectivity within and between associated LAUs. Additionally, the project would not remove or significantly alter any of the other primary constituent sub-elements including: space; nutritional or physiological requirements; cover or shelter; breeding or rearing sites; or habitats protected from disturbance that represent historic, geographical, and ecological distribution of the species. Please see vegetation for discussion of impacts to whitebark pine.

Consultation for wolverine is being conducted at the Regional level at this time and not on site-specific projects due to the range of the species, generalized habitat associations, and the potential impacts of climate change on the species due to its affiliation with persistent snowfields.

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33. Please provide us with the full BA for the whitebark pine, wolverines, pine martins, northern goshawks, grizzly bears and lynx and lynx critical habitat.

Response: ESA consultation and a biological assessment is only required on federally listed species. The pine marten and northern goshawk on not listed species and consultation for wolverine is conducted at the Regional level due to the species association with persistent snow cover. The BA for grizzly bear and Canada lynx and lynx critical habitat is available as part of the official Project File. In summary, the finding for grizzly bears is that Alternatives 2 and 3 *may affect, are not likely to adversely affect the grizzly bear*. This determination is based on: 1) although the existing condition of the Tobacco BORZ is considered to have adverse effects on grizzly bears, the East Reservoir Project activities fall within the range-of-effects analyzed in the programmatic BO for the 2011 Forest Plan Amendments for Motorized Access Management within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones and therefore, in itself, is not likely to contribute to the loss of grizzly bears from the Tobacco BORZ; 2) helicopter use associated with the this project is consistent with the management strategies found in the Guide to Effects Analysis of Helicopter Use in Grizzly Bear Habitat (2009) that are not likely to adversely affect grizzly bears; helicopter activities would not prohibit bears from using the area during any period of biological importance such as breeding, late fall foraging (hyperphagia), or denning; 3) the East Reservoir Project does not change the livestock management of the Tobacco BORZ; 4) project activities would not result in an increase in food attractants and would comply with the 2011 KNF Food Storage Order; 5) the project would not result in measurable increases in recreation use of the Tobacco BORZ based on limited improvements; and 6) the project does not involve changes to any type of mining activities within the Tobacco BORZ and would not result in habitat fragmentation between grizzly bear ecosystems, SCYE and NCDE.

The determination for the Canada lynx found the action alternatives *may affect, are not likely to adversely affect the lynx* and *may affect, are not likely to adversely affect designated critical lynx habitat*. This determination is based on the facts that: 1) these alternatives of the East Reservoir DEIS comply with all standards, guidelines, and objectives of the Northern Rockies Lynx Management Direction Record of Decision and its activities fall within the scope of those analyzed in the subsequent Biological Opinion (2007), more specifically, the project would not result in habitat conditions that would cumulatively contribute to the low level of species loss estimated by the 2007 BO; 2) these projects do not involve any activities that may result in increased areas of snow compaction, nor permanent loss of lynx habitat; and 3) although this project would temporarily affect the primary constituent sub-element, 'matrix' habitat and stem-exclusion stands, it meets ALL S1 standards, therefore maintaining habitat connectivity within and between associated LAUs. Additionally, the project would not remove or significantly alter any of the other primary constituent sub-elements including: space; nutritional or physiological requirements; cover or shelter; breeding or rearing sites; or habitats protected from disturbance that represent historic, geographical, and ecological distribution of the species. Please see vegetation for discussion of impacts to whitebark pine.

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Comment: The U.S. District Court just ruled that the Forest Service has to formally consult with the U.S. FWS on the Northern Rockies Lynx Management Direction effect on lynx and lynx critical habitat. Have you done this? If not please do so.

Response: Consultation for grizzly bear, Canada lynx, and lynx critical habitat was conducted with a letter of concurrence for effects received on August 8, 2013 for this project.

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Comment: In December 1999, the Forest Service and Bureau of Land Management completed their "Biological Assessment Of The Effects Of National Forest Land And Resource Management Plans And Bureau Of Land Management Land Use Plans On Canada Lynx" ("Programmatic BA"). The Programmatic BA concluded that the current programmatic land management plans "may affect, and are likely to adversely affect, the subject population of Canada lynx." The BA team recommended amending or revising Forest Plans to incorporate conservation measures that would reduce or eliminate the identified adverse effects to lynx. The Programmatic BA's

determination means that Beaverhead Forest Plan implementation is a "taking" of lynx.

The fact that continued implementation of the Forest Plans constitutes a "taking" of the lynx is not disclosed in the DEIS. Such taking can only be authorized with an incidental take statement, issued as part of a Biological Opinion (B.O.) during a Section 7 consultation. The FS must incorporate terms and conditions from a programmatic B.O. into a Forest Plan amendment or revision before projects affecting lynx habitat, such as the East Reservoir Project, can be authorized.

The Programmatic BA's "likely to adversely affect" conclusion was based upon the following rationale (p. 4), all of which apply here. Forest Plans within the Northern Rockies:

- generally direct an aggressive fire suppression strategy within developmental land allocations. …this strategy may be contributing to a risk of adversely affecting the Lynx by limiting the availability of foraging habitat within these areas.
- allow levels of human access via forest roads that may present a risk of incidental trapping or shooting of Lynx or access by other competing carnivores. The risk of road-related adverse effects is primarily a winter season issue.
- are weak in providing guidance for new or existing recreation developments. Therefore, these activities may contribute to a risk of adverse effects to lynx.
- allow both mechanized and non-mechanized recreation that may contribute to a risk of adverse effects to lynx. The potential effects occur by allowing compacted snow trails and plowed roads which may facilitate the movements of lynx competitors and predators.
- provide weak direction for maintaining habitat connectivity within naturally or artificially fragmented landscapes. Plans within all geographic areas lack direction for coordinating construction of highways and other movement barriers with other responsible agencies. These factors may be contributing to a risk of adverse effects to lynx.
- fail to provide direction for monitoring of lynx, snowshoe hares, and their habitats. While failure to monitor does not directly result in adverse effects, it makes the detection and assessment of adverse effects from other management activities difficult or impossible to attain.
- forest management has resulted in a reduction of the area in which natural ecological processes were historically allowed to operate, thereby increasing the area potentially affected by known risk factors to lynx. The Plans have continued this trend. The Plans have also continued the process of fragmenting habitat and reducing its quality and quantity. Consequently, plans may risk adversely affecting lynx by potentially contributing to a reduction in the geographic range of the species.
- The BA team recommends amending or revising the Plans to incorporate conservation measures that would reduce or eliminate the identified adverse effects to lynx. The programmatic conservation measures listed in the Canada Lynx Conservation Assessment and Strategy (LCAS) should be considered in this regard, once finalized.

The BA notes that the LCAS identifies the following risk factors to lynx in this geographic area:

- Timber harvest and precommercial thinning that reduce denning or foraging habitat or converts habitat to less desirable tree species*;*
- Fire exclusion that changes the vegetation mosaic maintained by natural disturbance processes;
- Grazing by domestic livestock that reduces forage for lynx prey;
- Roads and winter recreation trails that facilitate access to historical lynx habitat by competitors;
- Legal and incidental trapping and shooting;
- Being hit by vehicles;
- Obstructions to lynx movements such as highways and private land development;

It is clear, then, that the FS must do more than follow its Forest Plans to protect lynx.

The DEIS fails to fully demonstrate Project consistency with all LCAS Standards and guidelines. For example, the LCAS sets mandatory Standards that would modify or amend the Forest Plans—steps the BNF has thus far not accomplished. Important Programmatic Standards include:

> Identify key linkage areas that may be important in providing landscape connectivity within and between geographic areas, across all ownerships. (p. 87)
>
> Develop and implement a plan to protect key linkage areas on federal lands from activities that would create barriers to movement. Barriers could result from an accumulation of incremental projects, as opposed to any one project. (Id.)
>
> Map and monitor the location and intensity of snow compacting activities that coincide with Lynx habitat, to

facilitate future evaluation of effects on Lynx as information becomes available. (p. 82)

On federal lands in Lynx habitat, allow no net increase in groomed or designated over-the-snow routes and snowmobile play areas by LAU.

Response: East Reservoir DEIS was developed under the Kootenai Forest Plan and not the Beaverhead Forest Plan. It complies with all standards, guidelines, and objectives of the Northern Rockies Lynx Management Direction Record of Decision and its activities fall within the scope of those analyzed in the subsequent Biological Opinion (2007), more specifically, the project will not result in habitat conditions that will cumulatively contribute to the low level of species loss estimated by the 2007 BO. The project does not involve any activities that may result in increased areas of snow compaction, nor permanent loss of lynx habitat. Although this project will temporarily affect the primary constituent sub-element, 'matrix' habitat and stem-exclusion stands, it meets ALL S1 standards, therefore maintaining habitat connectivity within and between associated LAUs. Additionally, the project will not remove or significantly alter any of the other primary constituent sub-elements including: space; nutritional or physiological requirements; cover or shelter; breeding or rearing sites; or habitats protected from disturbance that represent historic, geographical, and ecological distribution of the species.

Consultation for Canada lynx, and lynx critical habitat was conducted. A letter of concurrence for the determination, "not likely to adversely affect," for both lynx and lynx critical habitat was received on August 8, 2013 for this project.

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Comment: The DEIS discloses use by motorized recreationalists in the Project area. But the DEIS provides an incomplete analysis of the impacts of the current level of use of the Project area for motorized recreationalists. The DEIS and BA fail to disclose the expected level of cumulative impacts on Lynx from the new roads and skid trails/logging access routes to be constructed—access that could be used by snowmobilers, snowshoers, and cross country skiers long after the logging activities have stopped. These roads can also impact lynx habitat during other seasons because of increased access for humans.

The increased access that will result from this project contradicts LCAS requirements because the new roads will create an increase in over-the-snow routes. The DEIS and BA fail to provide adequate maps of LAUs and habitat components along with areas of human activity as the LCAS requires, making it impossible for the public and decision maker to understand the impacts of motorized travel, as well as to understand impacts on habitat and connectivity of habitat. The BA lacks a genuine analysis of the full range of cumulative impacts of other activities. The DEIS and BA also fail to disclose the cumulative effects of livestock grazing on the grazing allotments in the project area.

The Programmatic BA's analysis of the ability of the Forest Plans, as 'amended' by the LCAS, to prevent a "taking" of the lynx is based upon the Forests' meeting management standards. As the Beaverhead NF has not adequately shown that it is in compliance with its old growth standards, or that it even has valid old growth standards, as detailed elsewhere in this appeal, the project BA and EA are not in compliance with the LCAS.

We also have to question the validity of the percentage habitat standards set by the LCAS itself. The Forest Service would be hard-pressed to find many Lynx Analysis Unit in the Northern Region—heavily logged or otherwise—that already don't meet these percentages. Basically, what these Standards accomplish is to validate the management status quo—the very situation that led to the listing of the lynx under the ESA.

Response: The lynx analysis for the East Reservoir Project begins on page 306 of the DEIS and discloses all required potential effects. The validity of the LCAS standards is outside the scope of this project. Consultation for Canada lynx, and lynx critical habitat was conducted. A letter of concurrence for the determination, "not likely to adversely affect," for both lynx and lynx critical habitat was received on August 8, 2013 for this project.

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Comment: The DEIS's action alternatives propose road storage, which will result in segments of roads being made hydrologically neutral and closed to all travel. We believe that those activities are of the highest priority of all proposed actions.

Response: Thank you for your support in this area.

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Comment: There is hardly any feature on forest landscapes that is less sustainable than a road network for which the Forest Service (FS) chronically receives inadequate funding for maintenance. For the same reasons, we are also firmly opposed to any new road construction.

Response: Your comments will be taken into consideration.

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Comment: We urge you to identify the "right-sized" minimum road system for the project area required by the Travel Management Rule (36 CFR 212.5), identify the details of a plan in the FEIS that will achieve that, and then

make the hard decisions that may conflict with other short-term interests yet will serve long-term ecological and economic sustainability.
Response: The Travel Management Rule (Nov. 9, 2005) directs the Forest Service to conduct travel analysis to inform decisions related to travel management. The East Reservoir travel analysis has identified the minimum road system needed for safe and efficient travel and for administration, utilization and protection of National Forest System (NFS) lands {36 CFR 212.5(b) (1)}. The analysis was used to inform decisions for the designation of roads, trails and areas for motor vehicle use in the project area, as shown on pages 3-943 through 3-403.
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Comment: Please disclose the mileage of roads proposed for storage that fall in to the category of those that may be stored by taking no action because they are currently hydrologically inert. This is important because reconstruction of such roads would in most ways create the same adverse impacts as new road construction.
Response: Your comment will be taken into consideration.
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Comment: Perhaps the most important ecological feature for forest ecosystems is the functioning and integrity of the soil. "Soil is a critical component to nearly every ecosystem in the world, sustaining life in a variety of ways—from production of biomass to filtering, buffering and transformation of water and nutrients. …(B)ecause soils are critically important building blocks for nearly every ecosystem on earth, an holistic approach to natural resources protection requires that soils be protected…" (Lacy, 2001.) A holistic restoration proposal would reduce the legacy effects from past timber harvest, and other human-caused disturbances which may affect watershed health and the terrestrial and aquatic ecosystems.
Response: Comments will be taken into consideration.
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Comment: The Region 1 Soil Quality Standards (SQS) are quantitative (≤15% detrimental soil disturbance), demonstrating consistency and compliance involves disclosing the amount of detrimental soil disturbance (DSD) that now exists in Activity Areas, and what the cumulative totals would be following disturbance by trails, roads, fire lines, and other causes of DSD. The DEIS does not disclose that the 15% threshold is not based upon scientifically or publicly (i.e., NEPA) developed limitations on the soil damage.
Response: Table 3.37 in Chapter 3 discloses all existing soil disturbance values on a unit by unit context in the proposed activity area along with the post-harvest cumulative DSD% per unit per alternative. The cumulative value includes not only proposed harvest activities as well as related new temporary road constructions and landings located outside proposed harvest unit boundaries as well as post-harvest fuel abatement impacts such as fire line constructions. It should be noted that not all proposed units involve similar fuel abatement activities.

Regarding the 15% threshold, it is based on research by Powers (1990). In areas where more than 15% detrimental soil condition exist from prior activities, the cumulative detrimental effects from project implementation and restoration should not exceed the conditions prior to the planned activity and should move toward a net improvement in soil quality. The standards do not apply to infrastructure and intensively developed sites such as permanent roads/landings, mines, developed recreation and administration sites.
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Comment: The DEIS provides a very vague explanation of the methods used to use measured soil survey data from assessment in the field to estimate total DSD for each proposed treatment unit. The accuracy of estimates given for previously impacted units is doubtful.
Response: As discussed on page 62…"All units containing evidence of existing soil disturbance related to past management activities received a full qualitative field survey using R1 Soil Survey Procedures. Field soil surveys consisted of random stratified transect/sample point methods with confidence intervals at or above 80% ± 5% with the majority of surveys being 95% ± 5%. Completed soil surveys can be found in the Soil Project File and/or District Files. Existing detrimental soil disturbance numbers are a result of all currently measureable effects of past actions in each activity area, including but not limited to timber harvest (trails and landings), temporary road construction, management related burns, cattle grazing, off highway vehicles, natural disturbances, firewood gathering, etc. These methods provide data that is used in the analysis to determine if Forest Plan and Regional Soil Quality Standards would be met..."

The soil surveys completed by the KNF Soil Scientist or KNF Soil Assistant are completed with equal intensity thus resulting in a confidence interval at or above 80% ± 5% with the majority of surveys being 95% ± 5%. As a result the KNF reviews provide a very accurate quantitative value of what the existing physical conditions are within the proposed management units. All data points are consistently sampled by reviewing the existing soil at every other pace. Each pace is considered to be a sample location and soil review is completed with a tile spade shovel to determine the resistance to penetrating the soil. Physical resistance to penetration was found to correlate well with altered soil conditions related to management activities. In areas displaying the strongest properties of legacy soil

compaction the shovel blade is only capable of penetrating a short distance into the soil and with great effort.

The soils resource report goes on in Soils Table 3.32 (page 63) to display what the average DSD coefficients are based on the average disturbance levels found in the field (2000-2005) following harvest and fuel abatement activities. This data group is being used as it is felt that it more closely represents current harvest/fuel abatement end soil disturbance values.

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Comment: The DEIS states that there has been a lot of logging in the project area in the past, in the era when soil impacts were of much lesser concern and therefore soil integrity was less protected. The fact that the DEIS does not even estimate the amount of DSD over the vast majority of those acres is ignoring cumulative effects on soil productivity and watershed effects, which is what NFMA requires the Forest Service to maintain. The soil quality standards the DEIS relies upon mostly limit damage to soils while carrying out the next set of management actions, without providing any scientifically justified metrics for soil productivity.
Response: The spatial scale or geographic bounds for considering cumulative effects consist of the same activity area analyzed for the direct and indirect effects. This is appropriate because soil productivity is spatially static and productivity in one location does not affect productivity in another location. The activity areas are delineated as directed by Forest Service Manual R-1 Supplement No. 2500-99-1.

Furthermore, as stated on page 97…"The temporal is scale dependent on the issue being addressed with no one scale being appropriate for all issues…..Furthermore, there is often a lag between some options and the observed effect. This is particularly true for soils…"

The Soils Specialist Report follows Regional Guidelines for DSD as identified in FSM 2500-99-1. Not all disturbance is identified as detrimental. The discussion of the adequacy of standards (FSM 2500-99-1) and lack of public land laws is beyond the scope of this analysis.

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Comment: The DEIS also fails to adequately explain how measurements of conditions relating to measured soil damage equate with effects on short- and long-term soil productivity. The DEIS also ignores much science when it claims that soil erosion, displacement, and compaction do not affect soil productivity.
Response: To address the temporal scale of both short-term and long-term soil productivity, the KNF has actively been involved in an intensive post-harvest soil monitoring program. This KNF soil monitoring program originated in 1988 and is still actively continuing. As of 2012, a sum of 254 timber sales (538 timber sale units) involving 6,625 acres has been monitored following harvest and fuel abatement activities to determine the impacts of timber removal activities on soils within the KNF. This information has been used to solidify the amount of disturbance expected to occur based on differing harvest practices using different pieces of machinery.

Beginning in 2012-2013 field seasons, the KNF embarked on a soil study to determine if soil recovery was occurring in a selected sub-group within the units where post-harvest soil monitoring data had been collected. The time period of this study was those units monitored, between 1992 and 2006, which contained post-harvest soil monitoring transect data. By the close of the 2012 field season, 55 timber sales (118 timber sale units) involving 3,338 acres using soil sampling procedures identical to those between 1992 and 2006 was completed. Results found that approximately 80% of the units had measureable reduced DSD value and thus an improved soil recovery and related productivity as compared to initial soil monitoring surveys. This research has not yet been published.

Regarding Soil Erosion, Displacement and Compaction: All three if these variables were used to calculate the existing DSD values. Refer to Chapter 3, page 63.

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Comment: The March 2009 "Region 1 Approach to Soils NEPA Analysis Regarding Detrimental Soil Disturbance In Forested Areas: A Technical Guide" states, "When these indicators (compaction, rutting, burn severity, displacement, surface erosion and mass movement) are found, the soil is considered disturbed. When management activities cause the indicators to exceed the threshold established in the soil quality standards, the disturbance is considered detrimental (potentially impairing productivity)." The DEIS fails to demonstrate that the disturbances noted in soil survey project file documents don't pass objectively and reasonably established thresholds.
Response: The adequacy of the Soil Technical Guide is beyond the scope of this project. The above summarizes only what may be present on a single location within a proposed unit. Total DSD calculations are a quantification summary for the entire unit along with proposed temporary roads constructed for timber harvest and new landings. As a result, the total detrimental disturbance value needed to determine if 15% or greater disturbance is present is a "quantitative summary value".

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Comment: The above-mentioned March 2009 Region 1 Technical Guide indicates that the Forest Service allows those doing soil surveys to lack basic scientific training or other proper qualifications. Such personnel are the only

ones collecting the field data, therefore solely making the determination of what is or what is not DSD. It is not clear if the KNF surveys for this project were collected by properly trained and qualified individuals.
Response: All data for the East Reservoir Project were either collected by the KNF Forest Soil Scientist or someone who has been trained in soil survey procedures.
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Comment: The above-mentioned March 2009 Region 1 Technical Guide also doesn't specify or define the various levels of soil survey intensity, to allow anyone to understand how soil surveys themselves can be considered providing accurate information. Legacy soil damage such as compaction may not be evident from simple visual surveys or shovel tests. Furthermore, the accuracy of soil compaction estimates using the survey methodology the KNF utilized cannot be determined, because the DEIS did not disclose the accuracy and reliability of those techniques.
Response: The March 2009 Region 1 Soil Technical Guide is beyond the scope of this project.

As discussed on page 62…"All units containing evidence of existing soil disturbance related to past management activities received a full qualitative field survey using R1 Soil Survey Procedures. Field soil surveys consisted of random stratified transect/sample point methods with confidence intervals at or above 80% ± 5% with the majority of surveys being 95% ± 5%. Completed soil surveys can be found in the Soil Project File and/or District Files. Existing detrimental soil disturbance numbers are a result of all currently measureable effects of past actions in each activity area, including but not limited to timber harvest (trails and landings), temporary road construction, management related burns, cattle grazing, off highway vehicles, natural disturbances, firewood gathering, etc. These methods provide data that is used in the analysis to determine if Forest Plan and Regional Soil Quality Standards would be met..."

The accuracy in soil disturbance values has been solidified through a very intensive post-harvest soil monitoring program of units previously harvested and had fuel treatments completed. This soil monitoring program originated in 1988 and is continuing into the future. As of 2012, a total of 254 timber sales (538 timber sale units) involving 6,625 acres have been monitored following harvest and fuel abatement activities to determine the impacts of timber removal activities on soils within the KNF. This information has been used to solidify the amount of disturbance expected to occur based on differing harvest practices using different pieces of machinery.
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Comment: The KNF has no regulatory mechanism, following from NFMA, which addresses the essentially permanent loss of soil and land productivity due to the noxious weeds that active management cultivates. The DEIS cites no monitoring results that actually demonstrate affirmative control of noxious weed outbreaks, nor is any monitoring of the efficacy of noxious weed treatments cited.
Response: (ER DEIS pg. 329) The East Reservoir DEIS (ER DEIS) has incorporated by reference the Kootenai National Forest Invasive Plant Management FEIS/ROD (2007) (KNFIPMFEIS/ROD) which addresses the environmental effects of invasive plant treatments and authorizes control including chemical and biological control. The EIS also states, "*field studies of the effects of herbicides on soil microorganisms are limited. The risk assessments conducted by SERA conclude that the plausibility of adverse effects on soil productivity from any of the proposed herbicides is minimal. Results from studies on 2,4- D, aminopyralid, chlorsulfuron, clopyralid, and metsulfuron methyl indicate that the maximum concentrations projected in the soil following herbicide application would be below the toxic effect level. Laboratory and/or field studies on the other eight herbicides (dicamba, glyphosate, hexazinone, imazapic, imazapyr, picloram, sulfometuron methyl, triclopyr) indicate some level of inhibition in soil microbial activity but substantial impacts on soil – i.e. gross changes in capacity of soil to support vegetation – do not seem plausible. Field experience in the use of these herbicides in cropland situations indicates no change in soil productivity that would inhibit plant growth* (KNFIPMFEIS pg. 3-100)."
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Comment: "Large woody debris is essential for maintenance of sufficient microorganism populations and long-term site productivity." (IPNF's Bussel 484 DEIS at 161.) In order for to adequately analyze and disclose cumulative effects, in the context of such "essential" factors, field surveys of representative past logged areas must be performed in the project area. The DEIS fails to disclose data from project area surveys for coarse woody debris in old logging units, which is another way that the cumulative effects analysis is inadequate.
Response: Over the past 2 years the KNF has resurveyed past harvest units to determine remaining CWD concentrations following fuel abatements. These surveys show that in regeneration units post-harvest stands are meeting the CWD requirements as determined by Graham et al. 1994 and Brown et al. 2003. Coarse woody debris provides micro-sites for microbial activity, retains carbon on-site, and moderates soil moisture. Maintaining CWD at required levels identified in these guidelines will ensure that both short-term and long-term soil productivity is maintained. Implementation of the action alternatives in the DEIS is not expected to adversely impact nutrient cycling as related to CWD requirements.

Comment: Applying the concept of Historic Range of Variability (HRV) for sustaining forest ecosystems, as the DEIS does, may be appropriate as long as the uncertainties pertaining to reference conditions of the project area are addressed, and all important resource conditions are adequately considered within the HRV framework. The DEIS, unfortunately, represents an imbalanced use of the HRV concept. For example, given the paucity of historical data of timber stands and landscape pattern of the project area, and given that data is obsolete, the DEIS's analysis does cannot adequately support the proposed manipulation of timber stands. It is extremely important to utilize the best data available to make accurate determinations of the reference conditions and to be able to therefore correctly identify departures from the reference conditions (Churchill, 2011; Noss, 2001).
Response: Churchill (2011) was written to provide a science summary for mesic forests for the Colville National Forest restoration strategy. Churchill (2011) explains how HRV needs to use a variety of tools, it is not as simple as just having current data.

"……Use multiple tools to derive site specific targets: Pre-settlement conditions offer a baseline from which to evaluate current conditions and obtain a general direction for restoration. They are especially useful in identifying conditions that are clearly outside of historical precedent. They can often tell us clearly what *not* to do. Deriving specific targets from HRV is much more difficult, as the range of historical conditions is so wide. HRV should be combined with functional information and tools such as habitat requirements for focal species, fire modeling (e.g. flammap), aquatic restoration needs, and other objectives…."

In addition, Noss (2011) states:
"…the variable nature of ecosystems suggests that conservationists have a moving target. …One of the most useful new ideas is the concept of "natural" or "historic" range of variability. This concept recognizes that natural ecosystems are always changing, but that variation over time falls within certain bounds. …Many ecologists consider the historic range of variability before European settlement (in North America) to be the appropriate set of "reference conditions" for comparison with human-altered conditions and a guide to enlightened management.…The logic behind the use of historic variability to guide ecosystem conservation and management is compelling. …The challenge for conservationists is not to prevent change. A sustainable relationship with a dynamic earth requires that we allow ecosystems to respond to environmental change with minimal losses of biodiversity. That means assuring that the changes we impose on ecosystems are within the range of variability that native species have experienced over their evolutionary histories."

In order to understand the variations ecosystems have experienced over time, a variety of data sources are needed. For instance, Noss makes reference to data from fire scars on trees and pollen and charcoal laid down in lake sediments that helped assess and understand fire-return intervals and proportions of old growth in the Oregon Coast Range over the last 3,000 years. Such data could have been gathered several decades ago and still be relevant when it comes to understanding the historic range of variability in a forested environment.

Managing the forest for multiple resources while attempting to emulate natural processes is not an exact science where there is one correct solution. The reference conditions that are used in this project analysis were derived from a variety of sources. The ranges of conditions are estimates based on a synthesis of information from research of historic vegetation (Lesica 1996, Losensky 1994, Fisher and Bradley 1987) as well as other documents and analysis such as the Interior Columbia River basin Ecosystem Management Project (USDA, USDI 1997). Historic and pre-historic information (back to 351 A.D.) from research (Chatters and Leavell 1995) of bog cores (analyzed to identify the species composition from pollen found in the cores) were also used to develop the reference ranges. The reference conditions used in this analysis are documented in the Vegetation Response Unit Characterizations and Target Landscape Prescriptions (USDA Forest Service 1999).
District vegetation databases (FACTS, FSVeg), a R1 Summary Database and field reconnaissance were utilized to generate information on forest vegetation attributes such as forest cover type, stand density and successional stage, the vegetation response unit (VRU) classification, incidents of insect and disease, as well as information on past activities. Annual aerial observations of insect and disease activities were also evaluated to facilitate understanding of longer term fluctuations in insect and disease dynamics across the landscape. Aerial photographs, both historic and contemporary were used at various stages of the analysis. Scientific literature, field reviews and subsequent silvicultural assessment were also used in the analysis. These analysis tools were used to identify site-specific treatment needs that address the purpose and need for the project.

The inherent limitations to the database and models are recognized. Not all surveys and subsequent data come from the same time period, with some surveys over 20 years old. A portion of the areas with older data were field reviewed and determined it was still valid for analysis. The data is used primarily for broad generalizations, arithmetic sums and means, and to supplement current, site-specific information gathered at each proposed unit and area of interest. R1 FSVeg has adequate resolution and accuracy for applications required in this effects analysis discussion.

We are not attempting to recreate past conditions, and do acknowledge that the modern human imprint cannot be eliminated. Our proposal to restore ecosystems within a broad historical range is an attempt to keep all the parts, and to maintain a sustainable and resilient ecosystem, based on coarse filter management theories.

Proposed management activities are designed to fit within acceptable and manageable historic ranges (reference conditions) we have identified, and are designed to foster the processes and patterns that make up the ecosystem. Knowledge of historic conditions and natural disturbance processes, as described in the VRUs later in this analysis, can help clarify the types, extent and causes of ecosystem changes, and can help identify management objectives and restoration priorities (Brown 2004). It is hypothesized where community composition and structure occur within a historic range of conditions, the function of the landscape community will also be maintained within its historic range. It is important to note that function cannot be maintained by restoring the vegetation structure, composition and patch size without restoring fire on the landscape. No mechanical means alone can duplicate the unique ecological effects of wildland fire, such as soil heating, nutrient recycling, and the resulting effects to the community composition and structure (Kauffman 2004, pg. 880).

Reference conditions provide insights to important questions such as natural frequency, intensity and scale of disturbances, abundance and rareness of plant and animal species, and the age-class, size classes, and tree species composition (Kaufman et al. 1994). They also provide a valuable tool when combined with other information gathered from a variety of sources, such as site-specific investigation, old timber type data, old photos, fen (bog) sediment analysis, fire scar analysis, historical and research references, and inferences from VRU classifications designed for the Kootenai National Forest.

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Comment: Whereas the project often retains the largest trees in treated units, the DEIS also discloses that logging of some large-diameter trees may occur. This is inconsistent with the best science on the relative scarcity of large, old trees on the landscape—even outside old growth. (E.g., Hessburg, et al. 2007.) The action alternatives would be better in line with the latest science if a diameter limit on tree removal or cutting was adopted that would leave standing the vast majority of large, old trees in treated units.
Response: In general, the largest trees will be left in treated units; however there are some situations where a smaller diameter will be chosen over a larger tree due the unit specific objectives. For examples, leaving mosaics of habitats including large and small trees while reducing density.

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Comment: The lack of an accurate, reliable forestwide old-growth inventory just increases our concern that the Forest Service is unwilling to take the necessary steps to assure wildlife viability.
Response: The amount and distribution of old growth is monitored annually and documented in the annual Forest Plan Monitoring Report. These reports are available on the Kootenai National Forest website. The KNF is currently meeting old growth standards set by the 1987 Forest Plan.

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Comment: The majority of the unmanaged stands in the watershed are mature forest. Also, there is a need to manage for the arrangement of potential future old growth. (DEIS at 5, 6). The lack of a desired condition statement for this important wildlife habitat reduces the credibility of the DEIS. Whereas the DEIS has active management prescribed to meet desired conditions related to vegetation, we strongly believe that identifying areas to be prioritized for preserving as is areas of habitat for old-growth MIS and other key wildlife based upon the HRV of old growth and the latest ecological science[2] are necessary to meet forest plan and legal requirements for insuring viable populations of wildlife.

Harris, 1984 believes that "biotic diversity will be maintained on public forest lands only if conservation planning is integrated with development planning; and site-**specific protection areas must be designed so they function as an integrated landscape system."** (Emphasis added.)
Response: Recognition of the need and desire for a variety of habitats for wildlife, including old growth, is demonstrated by the first two statements under the purpose and need for the proposed action. The amount and distribution of old growth is monitored annually and documented in the annual Forest Plan Monitoring Report. These reports are available on the Kootenai National Forest website. The KNF is currently meeting old growth standards set by the 1987 Forest Plan.

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Comment: Largely because of past logging, the project area falls extremely below the HRV for old-growth habitat

[2] See for example, Camp et al. 1997 regarding "old-growth refugia", or the areas on the landscape where old growth would likely persist in the face of natural disturbances, based upon such factors as slope, aspect, juxtaposition with streams, and forest types.

conditions—even well below the 10% forest plan distribution standard. We appreciate that the DEIS documents the FS designating "replacement" old growth to meet and even exceed the 10% distribution standard, however the result, as viewed from the map, is still highly fragmented habitat with no dedicated habitat areas for connectivity. This is not consistent with the best science.

Information from the KNF's Gautreaux (1999) indicates that about 22% old forest or old growth is at the lower limit for "reference conditions" on the KNF. The KNF's Dueker and Sullivan, 2001 state: "We recognize that historical conditions probably provided a higher level of old forest habitat through time than what is provided by the Forest Plan direction (a mean of 27.7% as opposed to 10%)." So utilization of the Forest Plan's 10% old-growth Standard itself is not consistent with the KNF's own best available science on "reference conditions." Lesica (1996) stated that use of 10% as minimum old-growth standard may result in extirpation of some species. This is based on his estimate that 20-50% of low and many mid-elevation forests were in old growth condition prior to European settlement. The KNF has never completed an analysis, based upon the best scientific information available, that adequately analyzes the wildlife viability implications of managing the KNF well below the HRV.

The EIS does not disclose how much old growth, or how much habitat for old-growth associated wildlife species, has been destroyed or degraded by all the past logging in the project area. The significance of these past cumulative impacts is without analysis, contrary to NEPA.

The FS acknowledges that a substantial percentage of the old-growth blocks counted as "effective" old-growth in the KNF are less than 50 acres, however Forest Plan states that this designation of such small blocks as effective was to be the "exception rather than the rule." Since the Forest Plan indicates that blocks of old-growth timber less than 50 acres in size do not "provide habitat for those wildlife species dependent on old-growth timber for their needs", it cannot be "best science" for any of the blocks less than 50 acres to be considered "effective" old growth for inventory and viability analysis purposes. Designating these smaller blocks has become the rule, and not the exception, as cautioned against when the Forest Plan and its related strategies were adopted.

Since there is no scientific support for the premise that the present amount and distribution of designated effective old growth and replacement old growth (ROG) in the project area supports viable populations, it is troubling that the project activities will deplete even more habitat for the wildlife that are associated with old growth. This runs counter to the forest plan and NFMA mandates to assure viable populations.

The DEIS's analysis methodology allows the Forest Service to continually log mature forest whenever and wherever, without considering the potential of those areas to achieve the HRV of old growth, connectivity, patch size, edge effects, etc.

Response: The DEIS provides a list of past management activities in the Cripple PSU, on page 3 of chapter 3, dating back to 1976. Prior to 1976 records are few. Likely several of these treated areas contained large diameter trees, but whether or not all elements of old growth were present is speculative. Since 1987 the KNF has been managing old growth at 10 percent in all major drainages and will do so until new standards are in place. The amount and distribution of old growth is monitored annually and documented in the annual Forest Plan Monitoring Report. These reports are available on the Kootenai National Forest website. The KNF is currently meeting old growth standards set by the 1987 Forest Plan.

While areas designated as old growth are not currently optimal, these areas are very well connected as demonstrated by the amount of cover disclosed under the analysis for large ungulates (i.e. elk, deer, etc.). Current cover levels on National Forest and US Army Corp. of Engineer lands exceeds 80% of the analysis area.

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Comment: The KNF and project area are not being managed compliance with the MA 13 Facilities Standard #1, which requires that "Local roads will be restricted to prevent premature cutting of the snag component" (Forest Plan at III-56). We note that <u>both</u> of the action alternatives would exacerbate this negative situation by fragmenting old growth and increasing edge effect by new roads and logging adjacent to old growth, worsening the viability situation for old-growth associated wildlife.

Response: Where old growth areas are thought to be susceptible to firewood cutters, they are signed as "no firewood cutting" allowed and enforced through the issuance of form FS-2400-001 (Forest Products Removal Permit and Cash Receipt). These permits are issued under certain conditions which clearly state where firewood cutting is permissible. Granted some snags in old growth are likely lost due to individuals not adhering to these permit conditions are those caught are prosecuted to the extent that the governing laws allow.

The East Reservoir project does propose new temporary roads (666 feet). Construction of these roads will likely remove some snags and this effect is disclosed in the DEIS beginning on page 204. Following the use of temporary roads, the temporary prism will be decommissioned and not passable by firewood cutters so a continued effect on

snags is not anticipated. Any portions of new permanent roads through old growth will be restricted by a barrier (gate, rocks, berms etc.) following treatment activities and again, snags will not be susceptible to firewood cutters unless illegal trespass occurs.

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Comment: The failure of documented pileated woodpecker nesting in the project area may be attributable to KNF forest plan direction that does not recognize the average snag diameter being almost 30" dbh for this MIS. The need for large diameter snags for nesting trees for the pileated woodpecker is downplayed in the DEIS. McClelland and McClelland (1999) found, in their study in northwest Montana, that the average nest tree was 73 cm. (almost 29") dbh. The DEIS does not consider that such large snags are absolutely necessary for keystone wildlife species such as the pileated woodpecker, therefore absolutely necessary for so many species that rely upon its excavated cavities.

The DEIS does not present data on pileated woodpecker population abundance or nesting success in the project area. Since there is no scientific basis for assuming that 10% old growth is enough for species viability, and since there is no scientific basis to support the KNF's use of its MIS as adequately "indicating" for other species including the Sensitive wolverine, black-backed woodpecker, fisher, flammulated owl, northern goshawk, western toad, wolverine, Townsend's big-eared bat, etc., the proof would be in the monitoring. And the Forest Service has not completed monitoring that would validate the assumption inherent in the Forest Plan's old-growth habitat standards—that they are adequate for assuring old-growth species' viability. We also note that the Forest Service has stated that this KNF old-growth MIS don't really work as the forest plan intended, which leaves NFMA's viability purposes short-changed.

Response: The DEIS discloses potential effects on old growth, snags, down wood, and pileated woodpecker beginning on page 200; the fisher on page 265, flammulated owl on page 270, and the northern goshawk on page 235. The DEIS discusses the importance of large diameter trees and subsequent snags for all of these species in their respective sections. For example, within the snag analysis it was noted that "In the long-term, the proposed improvement harvests identified in the action alternatives are expected to provide for the continuity of large-diameter ponderosa pine and Douglas-fir. This in turn provides a long-term benefit to cavity-dependent species, as over time they would become snags. Commercial thinning would follow a basal area reduction prescription. A majority of the ponderosa pine-Douglas-fir stands would retain larger and older trees in the overstory to maintain vertical structure and provide future replacement snags" as well as this statement under flammulated owls which acknowledges that "Proposed timber harvest has the potential to impact flammulated owl habitat. Selective logging that removes large ponderosa pine or Douglas-fir trees can decrease the availability of early-season feeding sites, song and roost sites, and trees for snag recruitment in areas already limited in large snag abundance (Wright 1996 p. 77). Snag removal during timber harvest for OSHA safety standards also removes suitable habitat for flammulated owls," thus emphasizing the importance of the large snag component.

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Comment: There exists no scientific justification why the FS has dropped the goshawk from the Sensitive species list for the KNF. USDA Forest Service, 2011d states on p. 3-194, "Region 1 has defined viability for the goshawk as one pair for every 10,000 acres (Warren 1990)." Logically, the KNF being 2.2 million acres/10,000 acres per goshawk pair = 220 pairs needed for viability on the KNF.

Given that its own (KNF) information on low goshawk numbers existed as least as early as 2006—when the northern goshawk was on the Sensitive species list, it is inexplicable why the KNF has failed to consider its own scientific information that strongly suggests viability of the goshawk has been severely in doubt on the KNF for years now.

Response: Northern goshawks, especially during the breeding season, can be difficult to find. Likewise, individuals respond differently to solicit calling. The fact that only one goshawk pair responded to surveys does not rule out the existence of other breeding pairs in the PSU. It is likely additional pairs of nesting goshawks will be found during implementation and, if so, nesting territories will also be established for these goshawks. Concerns related to the removal of the northern goshawk from the Region 1 Sensitive Species Lists need to be addressed to the Regional Forester.

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Comment: Lacking valid scientific support for its habitat management strategy, and without adequate historical and current data covering the project area, the Forest Service has left assurance of the viability of MIS and TES species on the KNF in limbo. The Committee of Scientists (1999) makes this point about species viability;

> (P)erhaps the single best metric of sustainable use of land is the persistence of species over time. The public needs to understand that the productivity of an ecosystem can be sustained over the long term only if species persist.

Population dynamics include assessing population size, population growth rate, and linkages to other populations and must be included in a scientifically sound population viability analysis. Ruggiero, et al. (1994a) point out that a sound population viability analysis must utilize measures of population dynamics. Mills (1994) explains the range of

parameters that must be used to make a scientifically sound assessment of the viability of wildlife species. Population dynamics refers to persistence of a population over time—key to making predictions about population viability.

The key factors that affect population dynamics of those MIS and Sensitive species are not adequately considered in the cumulative effects analyses, therefore viability is not assured, as NFMA requires. The DEIS does not disclose and utilize the best scientific information available on those species, as NEPA requires.
Response: Documentation for presence or absence of all suspected species and what is known about their populations for the analysis area is disclosed in the respective sections of the DEIS.

The project complies with NFMA direction (16 USC 1604 (G)(3)(b) to "provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives, and within the multiple-use objectives of a land management plan adopted pursuant to this section, provide, where appropriate, to the degree practicable, for steps to be taken to preserve the diversity of tree species similar to that existing in the region controlled by the plan."

Field surveys for various species were conducted during the planning of this project with results disclosed under the discussion for individual species. Potential effects of this project on these species or their habitats are also disclosed as required under each respective resource section.
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Comment: The EIS conflates "replacement old growth" with old growth that meets Green et al. criteria in various analyses. This is not in accord with the best science, NFMA, or NEPA, since the DEIS admits that "replacement" old growth is not required to meet the criteria.

The old growth analysis together with the old-growth MIS analysis does not consider the HRV or any historic conditions where addressing population viability.
Response: While areas designated as old growth are not currently optimal, these areas are very well connected as demonstrated by the amount of cover disclosed under the analysis for large ungulates (i.e. elk, deer, etc.). Current cover levels on National Forest and US Army Corp. of Engineer lands exceeds 80% of the analysis area. Designated old growth acres within the Cripple PSU are 50 acres or greater. There may be some areas of undesignated old growth that are less than 50 acres which is the rationale for why they are undesignated. Other areas categorized as "designated replacement," may contain enough large trees to meet Green et al. but may lack other elements of old growth. Or these areas may contain all the old growth elements of old growth but lack enough large diameter trees. Regardless of the reason for being categorized as replacement old growth, they represent the best habitat currently available for old growth associated species.
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Comment: The science on climate change supports the idea that national forest management emphasis should shift away from logging to carbon storage. All old-growth forest areas and previously unlogged forest areas should be preserved indefinitely for their carbon storage value. Forests that have been logged should be restored and allowed to convert to eventual old-growth condition. This type of management has the potential to double the current level of carbon storage in some regions.
Response: The comment suggests the Forest Service's emphasis should shift to carbon storage and all old growth forest areas and previously unlogged forest areas should be preserved indefinitely for their carbon storage value. The scientific literature cited by the commenter does not support the policy prescriptions they suggest, particularly within the disturbance driven ecosystems of the inland west, including the East Reservoir area (see literature discussions in Forest Carbon Cycling and Storage Report (PF, Vol. S, Doc. 29). In addition, inferred carbon inventory maintenance or gains from deferred harvest can be an illusory claim, particularly applied at stand level practices such as in the East Reservoir project. These implied gains only hold true if harvest does not occur elsewhere in the world to supply the same world demand for timber (Gan and McCarl 2007; Murray 2008; Wear and Murray 2004). The result can be a net carbon impact if the timber is replaced in the marketplace with higher carbon source products such as steel or concrete or is harvested in a manner that does not result in prompt reforestation (Ryan et al. 201 0; Harmon 2009). However, the "No Action" alternative in the DEIS effectively represents the comment's intent, and the effects of the various alternatives on carbon storage and flux were examined (see East Reservoir EIS, errata and the Forest Carbon Cycling and Storage Report in the project record, Vol. S, Doc. 29).

The scientific and other literature provided in the comment has limited direct relevancy to the issue at hand: whether or not the relationship of the East Reservoir project to "climate change" warranted more detailed analysis in this DEIS. All represent valid studies or treatises on their particular subject matter (arguably with the exception of Hanson 2010), however their scope is either at the global scale or else study or focus on ecosystems quite different than those being considered here.

For example, the various Harmon papers (1990, 2001, 2002), Keith et al. 2009, and Homann 2005 deal largely with the relatively warm, wet forests of the Pacific NW where disturbance and succession dynamic, and thus carbon dynamics, differ substantially from those of the Kootenai National Forest.

Turner et al. 1995 and Woodbury et al. 2007 report estimates of existing carbon stocks and flux in U.S. forests. Neither paper recommends conversion of all forests to old growth conditions, or suggests a land management policy similar to that proposed in the comment. Similarly, Turner et al., 1997 is a brief letter to the editor commenting that another paper overestimates the potential benefits of carbon storage in harvested wood products and aforestation. Kutsch et al. 2010 presents a standardized protocol for the assessment of soil CO2 fluxes, with particular focus relative to monitoring national carbon budgets under global climate treaties and VanderWerf et al. 2009 is a scientific commentary recognizing that deforestation (which is not part of this proposal) is the second largest anthropogenic source of carbon dioxide to the atmosphere. Solomon et al. 2007 is the IPCC Summary for Policymakers on the physical science basis for climate change. All, within their global perspective, speak to human actions quite unlike those contemplated here.

Harmon 2009 is Dr. Harmon's testimony to Congress concerning "The Role of Federal Lands in Combating Climate Change." His seven key points are: "1) Forests are leaky carbon buckets; 2) Forests can play an important, but limited roles in sequestering carbon; 3) All carbon pools need to be examined when thinking through the merits of carbon policy; 4) To increase the sequestration of forest carbon, we need to either increase carbon inputs, decrease carbon outputs, or put forest carbon somewhere else; 5) Forests are best seen as a bridging strategy in carbon mitigation; 6) Seemingly "good" forest carbon ideas when examined at the stand level at a point in time dissipate when looked at the forest level over time; and 7) With accelerating climate change, forests may shift from being part of the carbon solution to being part of the carbon problem." The testimony is insightful and readable, but is aimed at national policy and does not support the comment's conclusions.

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Comment: The fuel reduction proposed actions have forest health implications—including adverse effects as the scoping notice implies. Since the fuel reduction regime represented by the proposal was not a planning scenario dealt with in sufficient detail (if at all) during Forest Plan development, both the project-level and programmatic ecological and economic costs and impacts remain unexplained and undisclosed. The Forest Service has not disclosed just how much of the KNF needs to be treated for fuel reduction in a manner that emphasizes maintaining fuel conditions that are not necessarily consistent with native ecological processes. The agency must address the cumulative impacts of fire and fire management under the current IKNF fire policy.

Response: From a fire and fuels management standpoint, fuel treatments in the WUI are the priority and the main objective is to provide for firefighter and public safety. When it does not conflict with this objective WUI fuels treatments are also intended to be consistent with native ecological process. Fuel treatments outside the WUI are intended to meet the purpose and need of the East Reservoir project.

Cumulative impacts from fire suppression are addressed in Chapter 3 (Pages 176-177) under the No Action Alternative of the Fire and Fuels Management section.

Analysis of the Kootenai National Forest's fire suppression policy and how much of the Kootenai National Forest needs to be treated for fuel reduction is beyond the scope of the analysis for this project.

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Comments: The large amounts of proposed canopy reduction via logging and burning concerns us also because of the presently unstable condition of creeks and tributaries. Bedload sediment effects go largely ignored. Therefore the impacts of rain-on-snow and other peak flow events are not adequately analyzed. The DEIS is not consistent with the best science on forest hydrology.

The DEIS relies upon BMPs for showing consistency with the Clean Water Act, yet doesn't disclose effectiveness of BMPs for that very purpose. The condition of most of the managed watersheds on the District argues against the validity of BMPs for protecting water quality and fisheries.

Response: Using the Rosgen methodology for assessing stream conditions, all the streams in the Analysis Area were determined to be in a Fair to Good condition. The proposed canopy reduction as well as proposed peak flow increases is within the range for streams in Fair and Good condition and as recommended in the Forest Plan.

BMP effectiveness and tracking for the KNF are located in the Water Resources Project File Appendix D and E.

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Comment: The DEIS discloses that bull trout and redband trout have likely been extirpated from the project area due to management actions. It also does not give any indication of population trends of the Sensitive westslope cutthroat trout—if surveys are showing maintaining, improving, or declining stocks.

Response: Surveys show that fish are utilizing available habitat. Electrofishing surveys found multiple year classes in fish bearing streams throughout the project area. INFS default RHCAs will continue to protect aquatic habitat and will avoid retarding RMOs. Streams in the project area were treated to remove native fish and allow stocked westslopes and advantage for spawning and rearing. The drainages have not been stocked are now repopulated with hybrid fish along the reservoir. Dunn Creek was not treated, however past stocking of the Kootenai River and its tributaries created an extensive hybrid swarm of fish. These fish have invaded Dunn Creek creating hybrid rainbows/cutthroat trout. The upper segment of the stream has a nearly pure population of westslopes that are isolated from lower Dunn Creek. This population is regulated by flow conditions. There is only one perennial tributary in upper Dunn Creek. The beaver flats below this tributary have been trapped out and no longer maintain water from year to year.

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Comment: The DEIS does not discuss the fish viability issues related to stream segments not meeting INFISH/Forest Plan Riparian Management Objectives (RMOs). The DEIS does not provide clear analysis as to how RMOs would not be adversely affected, or achieved over any time frame.

Response: Refer to Tables 3.47 to 3.51 in the Fisheries and Aquatic Species Resources section of the DEISs. These tables set the stage for RMOs in the project area. Fish viability was shown through electrofishing surveys which proved the existence of multiple year class fish. We know fish are using available habitat and maintaining populations that the local ecosystem can support. The data shows that, in general, most RMOs are being met or exceeded. Large wood debris numbers fully meet or exceed Forest Plan standards in drainages across the project area. Bank stability also meets or exceeds standards. Width to depth rations and pool frequency is mostly not being met. As stated in the EIS, width to depth ratios most always do not fit into local numbers on the Kootenai. These stream dimensions were calculated for streams on the Oregon and Washington coast. The numbers are therefore an indicator of the dimensions of streams in the area. Pool frequency was an RMO that was not met in most cases in the project area. Streams are still recovering from past activities and natural events. Large fires have influenced Cripple Horse Creek and Canyon Creek. Past grazing on Cripple Horse, Canyon, Warland and Five Mile have caused riparian problems. Past Forest Service fisheries habitat enhancement where wood was removed from stream channels has been wide spread across the area. Implementation of INFS into the Kootenai National Forest Plan in 1995 created a set of RHCAs to protect the riparian area and improve or protect key fisheries habitat elements. These elements were based on best scientific data that showed intact riparian areas led to healthier aquatic ecosystems. RHCAs have been monitored since implementation of INFS and have showed through protection streams have maintained or trended towards more natural states. This project will require all streams and wetlands buffered by RHCAs. Therefore, the existing condition will maintain or improve conditions. Since this is the language set in the Forest Plan this project will be consistent with INFS and will not retard the attainment of RMOs.

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Comment: In its overly narrow analyses of cumulative effects of past management activities, the DEIS does not provide adequate summaries of the purpose and need statements from past NEPA documents, the level of achievement of their desired conditions and/or project goals, results of required monitoring, nor the consistency of past project with resource conditions as expressed in the desired condition and purpose and need statements.

Response: The proposed project utilized past information from the turn of the century through dam construction to present conditions. Past management was consistent with direction and laws of that time. Recent management since 1995 has been consistent with INFS and is therefore consistent with the KNF Forest Plan. The project will also be constant will all other State and Federal laws.

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Comment: In closing, we intend that you include in the record and review all of the literature we've cited herein, and a comprehensive, detailed list will be provided shortly. Also, please keep each of our groups on the list to receive further mailings on the proposal.

Response: Electronic files of all submitted literature cited are included in the project file.

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Letter 8: J. Wandler

Comment: The alternative that does nothing, would indicate that all motorized trails would be left in place, but any other action suggests that a great portion of the motorized routes would need to be closed for wildlife ,ETC. This makes no sense, since the current conditions must not be affecting wildlife as the do nothing alternative suggests.

Response: The no-action alternative (Alt 1) does nothing to improve security during the hunting season as the draft EIS suggests. Currently, the security level is below desired security levels of 30% as recommended by Hillis et al. 1991. The desired condition is to meet or exceed the 30% standard and this will be made clear in the errata for the final EIS. Closing all or portions of the motorized trails will allow the Cripple PSU to meet or exceed the desired security conditions.

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Comment: If the need to close any motorized trails is included in any of the proposed actions, then as the process
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moves forward then the closures should occur as the project progresses. If units are dropped then additional trails will remain open, and not subject to closure. Over the course of the 10 year project?, it should take the 10 years to close those motorized trails. This will give time to determine if wildlife is being impacted by the remaining open routes, so that a minimal amount of closure would be necessary, if impacts are not present. This will also give additional time to query the public to prioritize/ identify the most used versus the least.
Response: If an action alternative is chosen, the closing of trails could begin immediately if funding allows. Closing trails over a 10-year period is unlikely because the area will be out of compliance with the security standards for elk under the new Forest Plan which is expected to be new direction in late 2013 or early 2014.
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Letter 9: R. and B. Geber
Comment: Proposed harvest units 3A and 3B in the Fivemile creek drainage directly border our property and are between our land and the Stenerson Mtn. road #4885. Currently we are unable to see road #4885 which is a heavily hunted road during big game season. We have made improvements to our land some being very valuable and providing our only source of power which is solar. The timber on Forest Service land is providing shelter to our solar array from road #4885. The timber makes viewing our array impossible at this time. We fear that by removing the timber in proposed harvest units 3A and 3B our array will be visible from the seasonally open road and may be vandalized or stolen. Please consider dropping these small harvest units or consider a fuels treatment instead.
Response: Commenters have been contacted. A field visit with the commenters to create some design features in the units/buffers and possibly drop the small piece directly above their property to mitigate concerns of hunters shooting/viewing down at their property.
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Comment: Proposed harvest units 3A and 3B in the Fivemile creek drainage will open the forest up to a level that people will be able to drive trucks or ATV's off road #4885 right up to our property for illegal recreation or firewood gathering. We have seen this become a problem across the Libby Ranger District after improvement harvests. Also, we have a major concern with the spread of noxious weeds onto our property from Forest Service lands, currently our property is nearly weed free except for the Forest Service easement along the southern side of our property. The easement is 30 feet from center line and only about 8 feet of the weeds are sprayed annually. The weeds have become established on the easement and do not all get sprayed, then blow their seeds onto our land and become our problem. We have seen timber harvests across the Libby Ranger District that lead to a noxious weed infestation that goes un-checked for many years. Please consider a fuels treatment or dropping these small harvest units.
Response: Commenters have been contacted. A field visit with the commenters will occur to create some design features in the units/buffers and possibly drop the small piece directly above their property to mitigate concerns of hunters shooting/viewing down at their property.
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Comment: Proposed harvest unit 3C is a seed tree, as defined by 95% canopy removal. You mention on page 365 in the DEIS under scenic resources that this harvest will not attract viewer attention but we will see it every day, as well as the numerous recreationists, hunters, and firewood gatherers who use the road, and do not want a 95% canopy removal next to our land. Please consider a fuels treatment as an alternative.
Response: Commenters have been contacted. A field visit with the commenters to create some design features in the units/buffers and possibly drop the small piece directly above their property to mitigate concerns of hunters shooting/viewing down at their property.
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Comment: We would like to voice our support of the following portions of the East Reservoir proposed action:

1) The proposed road changes and stream work in the Dunn creek drainage.
2) Seed tree harvests on the north aspect of the Fivemile creek drainage.
3) Converting current motorized trails to non-motorized. Approximately 26-36 miles.

Response: Thank you for your interest and comments in the East Reservoir project.
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Letter 10: Kootenai Stakeholders Forest Coalition
Comment: New Permanent Roads- We believe the increase in new permanent roads from 2.4 miles in the draft to 9 miles in the DEIS is justified based on your further analysis of the transportation plan and changed land allocations identified in the proposed Kootenai N.F. Forest Plan. Temporary roads that will be needed in the future should not be obliterated. New road construction that will result in a net reduction of unneeded temporary roads is a positive action.
Response: Thank you for your support in this area.

Comment: We encourage you to use existing temporary road templates where possible when converting to a permanent road. We also encourage you to provide adequate drainage structures on any permanent roads that will not be used for extended periods of time.
Response: Your comments will be taken into consideration.
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Comment: Motorized Trail Closure - We support your efforts to close motorbike trails that have simply evolved over time. This will result in improved elk security. However, we also recognize the need for motorized ATV trails and would recommend that the Boundary Mtn. Loop Trail be included in the selected action as proposed in Alternative 3.
Response: The Forest Service agrees with your assessment. The motorized trails being considered for closure never were designed for off-road vehicles when constructed 70 years ago and present serious safety issues to motorized users. The development of motorized trails for off-road vehicles will require Forest Service and user commitment to meet safety issues.
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Comment: Regeneration Units over 40 acres- We support stand treatments at landscape levels larger than 40 acres, provided that their design emulates the appropriate fire ecology of the stand. A mixed severity fire regime might have left smaller "skips" of unburned areas whereas a stand replacement fire regime would have tended to leave fewer, but larger "skips". We believe that these "skips" need to be designed through the prescription and implemented in the unit design wherever possible and not just left to chance following the harvest.

We would also encourage you to better explain your description of regeneration units over 40 acres in the EIS. If the end result will end up in a mosaic of different stands as described above, the reader needs to understand this. Otherwise they will simply assume that you will have a large clearcut.
Response: The DEIS explains regeneration harvests and specifically clearcuts in Chapter 2 on page 9.

Regeneration harvest treatment is intended to replace a forest stand when modification treatments (i.e. intermediate harvest) are not feasible due to poor quality trees for retention; stand is under stocked due past insect and disease mortality; or incorrect overstory species that will not meet management objectives. In this analysis area, regeneration is proposed in some stands to promote regeneration of seral, fire-tolerant species. Specifically, regeneration harvest is needed to restore western larch, ponderosa pine and western white pine. Within proposed harvest units, there will be both live and dead trees that are designated for reserve. The number of trees left and the associated stand structure is described by the varying regeneration harvest methods proposed. A description of these methods follows.

Clearcut with reserves also initiates establishment of a new stand. An average of 4 to 8 trees per acre will remain on site post treatment and their function will be as snags, cavity habitat, or replacement snags. Clearcuts are typically planted by hand, or may be reseeded by adjacent mature stands if desirable trees are present.

Each of the treatment units have been reviewed by a wildlife biologist and a visuals specialist. All of these clearcut will have reserve trees ranging from a minimum of 6 trees per acre to 12 or more for replacement snags and structural diversity. In addition, all snags that meet minimum snag criteria will be left in clearcut reserve treatment areas. Units that have additional concerns from the the wildlife and visual specialists have been addressed and have specific objectives to address them. For example, some clearcuts have more snag replacements required for leave due to the habitat or more reserve trees for visuals.

Following NEPA, we will move into project implementation including layout and marking guides. During unit layout we will be looking for cover patches within larger regeneration harvests to leave. Currently in the project, the exact number of islands and placement of islands has not been determined. This will be determined on the ground during layout and specific marking guides.

The response to this comment is fully disclosed in the project file, Vol. S, Doc. 30 (Over 40- acre justification).
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Comment: Old Growth – We support the treatment of old growth as originally proposed in Unit 133 during our initial field trip. Removing the Douglas fir in-growth will improve the growing conditions of the ponderosa pine and lessen the likeliness of insect attacks. We would also support treating the adjacent stand that appeared to be the same as Unit 133.
Response: Unit #133 was dropped as there were only four ponderosa pine trees in this unit. We focused the treatment where the majority of the Ponderosa pine is located in lower Fivemile Creek along the reservoir.
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Comment: Timber Harvest- Increasing the timber harvest acres from the draft of 8,070 acres to 8,845 acres is a positive move provided that the purpose and need of the project are met.

Response: Thank you, we appreciate your support of this project.
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Comment: Area Planning- We encourage the district to take a close look at the initial planning work that Deena Shotzberger had done on this project. We recognize that the lynx habitat requirements and the BORZ analysis of grizzly bear habitat outside of the recovery area are going to complicate attempts at long range planning. Being able to show where you can include existing old growth and replacement old growth in the future just makes a lot of sense. If these areas can be incorporated into wildlife linkage zones it gives everyone a much better perspective of the results of your future actions. We do not believe this level of planning will obligate the district to future action, but only be a good faith effort to plan for the future.

We also support Deena's explanation that these corridors are not necessarily "keep out" zones, but most likely would need some level of management over time to accomplish and maintain their stated objective.

Completing an area analysis in a large area like this one gives the planner the opportunity to set objectives and priorities for treatment. We do not feel this aspect of planning to be evident in the DEIS. Forests are certainly dynamic and likely to change based on species, weather conditions, insects, disease and fire. However, determining a priority for treatment appears to us to be necessity and not just a rolling of the dice. Our observations indicate that based on the age and condition of the lodgepole pine component, these stands are most in need of immediate treatment. Stands within the WUI and adjacent to private property should also make the priority list.
Response: The District's position on the working map created by Shotzberger is that it served as a catalyst for long-term thinking or planning for managing forest connectivity using forest layers currently available (e.g. INFISH, designated lynx habitat, as well as existing old growth stands) to visually display connecting habitats. Shotzberger's map was only a draft working copy and had not received additional input from other resources specialist during its creation. For these reasons, this working corridor map will not be included in the FEIS for the East Reservoir Project.
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Comment: We observed fir engraver beetle activity in the subalpine fir, which might be another consideration in some stands. Some of the stands show root rot (armillaria) in the Douglas fir. Do you have a good handle on these insects and disease? Road construction, reconstruction and post sale work are economical factors that need to be considered.
Response: The Regional Pathologist and Regional Entomologist have reviewed the East Reservoir analysis area. Both of these specialist spent several days in the analysis area and have prepared reports that can be found in the project file. There is actually very little armillaria in the analysis area, however there is schweinitzii root disease in the older Douglas-fir and western larch.
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Comment: We thank you for allowing our group to be a part of this project. The time that your district personnel have spent with us is surely appreciated. We believe this is really a good project and we would hope that the enclosed comments might help it be even a better one.
Response: Thank you for your interest and comments in the East Reservoir project.
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Letter 11: Yaak Valley Forest Council

Comment: The YVFC has been an active member of the Kootenai Stakeholder team that has been collaborating on this project. As a result of that involvement and thanks to you and your staff, we are very familiar with the purpose, need, and scope of the project. I've also been able to get out into a handful of the units on my own, monitoring current stand conditions while referencing the proposed treatments.

Although the project area does not fall within CORE grizzly bear habitat, it *is* located directly in-between the Northern Continental Divide (N.C.D.) and the Cabinet/Yaak Grizzly Bear Recovery Zones. Recent grizzly bear movement between the Cabinet- Purcell and N.C.D. areas via the Salish Mountains has been increasing. In 2004, a male grizzly bear swam across Lake Koocanusa traveling from the Purcells to the Salish Range. Bears are also moving west out of the N.C.D. area into the Salish Range with documentation of rising numbers of female bears with cubs in the northern portion of the range. These bears are not considered Cabinet-Yaak nor N.C.D. bears, but residents between the two recovery areas. The USFWS has acknowledged the importance of establishing and protecting functional linkage corridors *between* recovery zones in order to insure the recovery and long-term viability of grizzly bear populations.
Response: The East Reservoir Project is consistent with the biological opinion for the 2011 Forest Plan Amendments for Motorized Access Management within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones, and associated BORZ. Areas outside of either recovery zone and any BORZ are very well connected with these management boundaries (recovery zones or BORZ) as demonstrated by the amount of cover disclosed under the analysis for large ungulates (i.e. elk, deer, etc.). Current cover levels on National Forest and Army Corp. of
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Engineer lands exceeds 80% of the analysis area. Radio-collared bears have clearly demonstrated, as by your own statement as well as other examples, that bears do not appear to be having any difficulty moving between the NCDE and SCYE.

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Comment: During our first stakeholder field trip for the East Reservoir project in August of 2011, Deena Schotzburger presented a "connectivity map" that was developed to address not only linkage zones for the grizzly bear, but security and forage opportunities for several other species as well, along with old growth forests. She was very clear in explaining that management *would* occur within these linkage zones, with a focus placed on long- term attempts to satisfy varying needs; i.e., proposing treatments that would stimulate browse within elk winter range or managing replacement old growth to form larger patch sizes of old growth into the future. VRUs were factored into the map along with calculating various physical elements (topography). Historical wildlife travel routes were also referenced to establish zones of various uses within the map.

We are discouraged that the connectivity map failed to find its way into the DEIS. As the KNF moves into a new era of landscape scale assessment and away from the project-centric management model of the past, it's essential to equip the planning process with new tools that help shape large-scale treatments - the connectivity map represented such an aid.

At the last Stakeholder team meeting, your staff informed us the map was dropped because it was flawed - in that it did not take into consideration single-species or lynx management restrictions. While recognition of on-the-ground realities is a valid and necessary point, we don't believe it warrants abandonment of the entire effort. Why not instead consider an incorporation of management standards within the larger landscape context? We feel there is room for refinement with the connectivity map idea that could mesh the agency's concerns for single-species management.

The District staff also told us that the map was completely taken out of context by an environmental organization (a group that's not affiliated with the Stakeholders). Apparently, that group interpreted the corridor map as being a "no treatment" zone and wanted to see similar maps placed over the entire forest. One misinformed individual should not trump an effort that was embraced with such enthusiasm by a larger diverse group; whereas new endeavors should be coupled with an education time period with outreach designed to curb disinformation.

The employment of this connectivity map as the primary planning tool for the project area was markedly innovative. To members of the conservation community, it provided long-term assurances and reasons of practicality for proposed treatments. We also believe that it could be an extremely effective tool for the KNF in breaking down barriers with habitual litigants of USFS projects. But above all, it placed an emphasis on the longevity and health of wildlife as the basis for vegetative treatments while also incorporating long-term plans for old growth.

The new USFS Planning rule and Draft Forest Plan for the KNF both stress that ecosystem management is the way forward on our National Forests. As the USFS has established standards and guidelines for a new era of forest management, the agency should also be developing new ways of conveying their planning approach with the public. We strongly urge the District to re-consider the incorporation of the connectivity map with the East Reservoir project.

Response: The District's position on the working map created by Shotzberger is that it served as a catalyst for long-term thinking or planning for managing forest connectivity using forest layers currently available (e.g. INFISH, designated lynx habitat, as well as existing old growth stands) to visually display connecting habitats. Shotzberger's map was only a draft working copy and had not received additional input from other resources specialist during its creation. For these reasons, this working corridor map will not be included in the FEIS for the East Reservoir Project. Implementation of the East Reservoir Project will not in any way hinder development of a similar landscape connectivity map under a future project that incorporates all current management direction.

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Comment: Three out of the five stated purposes for the East Reservoir project contain the word "landscape."

- Re-establish, restore and retain landscapes that are more resistant and resilient to disturbance and uncertain environmental conditions such as climate change
- Create a heterogeneous landscape that provides a variety of habitats to sustain populations of terrestrial and aquatic species
- Reduce hazardous fuels adjacent to private property and across the landscape while re- introducing fire to the ecosystem.

These goals won't be achieved overnight and in some instances not during any of our lifetimes. The treatments

prescribed in the DEIS to achieve these targets are large-scale (both with pre-scribed fire and harvest units) and will have a dramatic effect on the landscape. The agency's intent to restore the landscape using HRV to help guide the way is well intended and strongly supported by our organization, however we question a focus that's placed on an elongated temporal scale where the immediate and short-term needs for wildlife habitat are jeopardized.

For example, we can support the long-term need to restore historic patch sizes that will one day provide large blocks of elk security and a variety of other wildlife benefits. However, in *some cases* to achieve these historic blocks the agency is proposing large regeneration units that are located next to already existing large regeneration units. One need only to look at a map of previous management within the project area to see that the landscape is currently awash in old clearcuts (or future large blocks). A majority of these existing clearcuts are probably in need of pre-commercial thinning, yet are unable to receive such treatment due to LAU restrictions. Un-thinned regenerated stands take an exceptionally long time to develop into mature forests and also make for heavy fuel loading from a wildfire perspective. The point we're trying to make here is that regeneration followed by an underburn will not necessarily create a stand 250 years from now that is resilient and restored. And even if it did, sacrificing wildlife security in the short-term would not justify the agency's end goal if there's no wildlife left 250 years from now to inhabit the re-created "historic" habitat.

The addition of a few design features within proposed treatments would go a long way in lessening the immediate impact of large openings on wildlife. For example, regeneration unit 62:

> Unit 62 was designed for wildlife species to maximize forage potential within summer habitat while maintaining 600 ft. to cover. This strategy allows elk to utilize both forage opportunities along the unit's edge and interior without the need to venture far from the forest cover. The shape of the unit mimics naturally created openings and contributes to the juxtaposition of forage and cover for the species. (DEIS, 224)

We strongly encourage the agency to re-shape the other eight regeneration harvest over 40 acres in size on the East Reservoir project in a similar manner to unit 62. In keeping their current boundaries, this could be accomplished within units via strategically placed leave islands or linear leave strips where silviculturally appropriate and feasible within logging operations. After all, why would the agency prescribe a treatment that mimics fire in only one unit out of an entire project that's using historical conditions of the ecosystem as a guide and where fire is the dominant disturbance regime?

The DEIS states that within regeneration harvests:

> Stringers and groups of trees would be left within the units to provide screening and minimize the effect of the openings when possible. (DEIS, chapter 3/ page 224)

This statement does not go far enough for our organization to get behind such large- scale regeneration treatments. We recommend for the agency to provide within their prescriptions a range of percentages for the groups of trees (leave-islands) that will be left within each unit over 40 acres in size. For a clear description of what we mean by this, please see Project-level Sideboards for Regeneration Harvest (Attachment 1). The common-ground sub-committee of the Kootenai Stakeholders developed these sideboards. Although that group has yet to formally agree to them, the YVFC fully supports them.

In alternative 2, Units 147, 148, 149, and 150 encompass 338 combined acres. Stand conditions within these units vary greatly. The larger a unit is, the greater amount of diversity it contains. And these are some rather large units. Yet in the DEIS, they all have the same blanketed seed-tree prescription. **If the agency seeks buy-in from the conservation community on large 40 acre + units, then the agency needs to provide more descriptive objectives, accurate conditions, and historically appropriate treatments for individual stands within their prescriptions.** If leave trees and security groupings are going to be left, then we need to know how much and in what portion of the unit they will occur. Because as it currently looks like on paper, these just appear to be 338 acres of clear-cuts in an already cut-over part of the KNF.

There appears to be a real opportunity within units 147 & 150 to implement mosaic treatments that would be more representative of the mixed-severity fire regime that historically occurred within VRUs 5 and 7. Units 147 and 150 both contain multiple acre pockets of healthier forest that could be left as leave islands within the units (Attachments 2 & 3). During the last stakeholder team meeting at the District, I mentioned some specific concerns that I had on unit 147. I have since spoken with Ann Weber on the phone and she has invited me to go out and take a look at that unit together. I greatly appreciate the offer and very much look forward to the trip and the opportunity to go over issues together in the field.

When the subject of regeneration units over 40 acres came up at the last stakeholder team meeting for East Reservoir, it appeared that the District did not have the same level of commitment as in previous meetings to mimicking fire within proposed regeneration units – leaving more of a mosaic that would have occurred within the mixed-severity regime. This was discouraging news to hear because there seemed to be real support for management that emulated fire on the landscape.

The DEIS states the **resolution** to regeneration units over 40 acres:

> Concerns of regeneration units exceeding 40 acres can be addressed by altering the shape of the unit and or leaving leave islands within the interior of the unit. These strategies address distance to cover, making the unit more available to wildlife species during daylight hours. Alternative 3 best addresses this issue by either re-shaping units to meet 600 ft. to cover or reducing units down to 40 acres or less in size. (DEIS, chapter 2/page 2)

We don't believe this is the best resolution to the issue. If the agency proposes a project the size and scope as East Reservoir, then the agency should be prepared to handle and *incorporate* issues that the conservation community may have on a project so large. We do not accept the placing of supposed resolutions into an alternative that we all know will not be selected as the preferred. We challenge the agency to consider taking not only the recommendations made in this letter but the ideas that the stakeholder team brought forth on this issue as well and develop a project within alternative 2 (the proposed alternative) that all parties can be satisfied with. In the true spirit of ecosystem management, we are asking you tom honor and value the social input on this project in balance with the ecological and economic needs. With some creativity and boldness, we believe there's more than enough room to incorporate all these values within alternative 2.
Response: Each of the treatment units have been reviewed by a wildlife biologist and a scenery specialist. All of the acres prescribed for clearcuts are clearcuts with reserve trees. All of these clearcut will have reserve trees ranging from a minimum of 6 trees per acre to 12 or more for replacement snags and structural diversity. In addition, all snags that meet minimum snag criteria will be left in clearcut reserve treatment areas. Units that have additional concerns from the wildlife and scenic specialists have been addressed and have specific objectives to address them. For example, some clearcuts have more snag replacements required for leave due to the habitat or more reserve trees for visuals.

Following NEPA we will move into project implementation including layout and marking guides. During unit layout, we will be looking for cover patches within larger regeneration harvests to leave where possible. Currently in the project, the exact number of islands and placement of islands is not determined. This will be determined on the ground during layout and specific marking guides. We have reviewed Project-level sideboards for regeneration harvest (Attachment 1). We feel we can implement these guidelines where it is feasible on the ground during project layout. We appreciate your understanding of the fact in some cases, due to logging system or prescribed fire implementation, skips may not be feasible in every unit.

The proposed action for the East Reservoir Project would create forest openings larger than 40 acres in size through the use of even-aged regeneration methods. Specifically, these larger openings are needed in order to:

- Trend the landscape towards a more desirable pattern of patch sizes that mimics natural processes and restores historical patterns of patch size (DEIS, pp.23-25; Vegetation Report, Desired Condition, VRU 4,5 and 7).
- Create a pattern of fuel treatments at a landscape scale that is likely to disrupt large fire growth and spread and assist in the efficacy of suppression efforts.Design fuel treatments to provide a fuel break immediately adjacent to a major power transmission line (DEIS, Fire and Fuels Report, p. 182).
- Create openings that reduce edge effect and reduce fragmentation, which can result from more numerous treatment areas and still achieve the same objectives (DEIS, Wildlife Report, pp. 224, 301, 308).

With past harvest activities, forage patches have become more uniform in size (30-40 acres) and shape. The existing condition, for the most part, is not representative of reference conditions. Past timber harvests have noticeably influenced the juxtaposition of wildlife cover and forage. Harvests have unnaturally affected "edge" habitats as well as interior habitats, the greatest impacts likely being on those species associated with large expanses of interior habitats (DEIS, Chapter 1, p. 4).

This disturbance regime (30-40 acre) provides suitable habitat for species that are adapted to the edges between forested and non-forested areas. However, species that require larger blocks of habitat are at a disadvantage under such a disturbance regime (DEIS, p.S-2). The majority of the past harvest within this area on NFS lands has fragmented the landscape due to the 40 acre opening limitation (DEIS, Ch. 3, p. 24).

Four of the regeneration harvests (Units 62, 40, 150 and 362) are proposed as over 40 acre regeneration, but do not mimic the large historic patch size of 5,000 to 100,000 acres. However, Units 62, 40 and 150 are placed adjacent to past harvest that are recovered, but are within the early-successional stage. By these units being blocked up with other early-successional stages, this larger block mimics historic conditions and would move into the future as a connected patch of interior forest (DEIS, Vegetation Report, pp. 45, 46, 47).

Additionally, Units 147, 148, 149 and 150 in Upper Fivemile Creek and Unit 170 in Warland Creek were designed to tie in with past regeneration harvests to simulate a fire that would have burned from the creek bottom to the ridge top due to continuous fuels and favorable topography. This would have been more typical of historic patch size and bum pattern when strategically located directly adjacent to existing regeneration harvests that are still an effective barrier to high fire spread rates. Treatments of this scale are also more likely to disrupt large fire growth and spread, and assist in the efficacy of suppression efforts when a fire occurs in these areas. Fire modeling indicates these areas are at risk of experiencing stand-replacing crown fire behavior if left untreated and both areas are within 1 ¼ miles of private property. In addition to the benefits described previously, Unit 362 near Hornet Ridge (Dunn Creek) was partially designed to provide a fuel break immediately adjacent to a major power transmission line.

For wildlife, creating openings over 40 acres better approximates the patch size and pattern of habitat that would have been available under natural disturbance processes and reduces edge effect and fragmentation that would occur with a greater number of openings of lesser acreage. Additionally, stringers and groups of trees would be left within the units to provide screening and minimize the effect of the openings when possible. There may be short-term disturbances within identified big game travel corridors due to project related activities (DEIS, pp. 224,301,308). Therefore, with the implementation of an action alternative, Alternative 2 which promotes large patch size, would benefit wildlife by addressing the issues of edge effect, fragmentation, and interior forests better than Alternative 3 which limits regeneration harvest units to 40 acres or less.

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Comment: The YVFC supports the proposal in Alternative 3 that creates an OHV loop in the vicinity of Boundary Mountain. It is our understanding that allowing for this loop trail would leave the elk security rating at 33% for the Cripple PSU. We suggest the District explore options for partnering with local ATV groups in finding the funds necessary to bring this loop trail system up to USFS standards - as opposed to diverting any money away from an already struggling USFS budget.

Response: The incorporation of the Boundary Mountain OHV loop will be the discretion of the Forest Supervisor. The Forest Supervisor will make that decision in the final EIS (FEIS) for this project. If chosen to be included, partnerships with local ATV groups are highly likely to occur.

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Comment: The Libby District should be commended for attempting to undertake a project of this size and scope. Viewing projects as a part of the larger landscape is an approach that can lead to widespread restorative efforts on the forest. We believe in the long-term goals of the project, yet feel that with a project so large – more planning and assurances need to be in place.

Response: Thank you for your interest and comments in the East Reservoir Project.

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Attachment 1

Project level sideboards for regeneration harvests

Regeneration harvests sideboards serve to retain various wildlife habitat components and balance the aesthetic concerns associated with created openings while also providing the flexibility for land managers to apply site-specific silvicultural prescriptions within the Suitable and Available Timber-base.

1.) Regeneration harvest prescriptions should be used as a silvicultural tool when it is appropriate within the VRU/HRV context, previous burn history, and serves to meet the desired future condition.

2.) Regeneration harvests need to be executed in a manner where cuts look and function biologically more like natural forest clearings resulting from fire or windthrow events. For example, in the mixed-severity fire regimes, the cuts should more accurately mimic burn areas that are irregular and although there may be large areas that were intensely burned, there were often leave areas that escaped the intense fire.

The intent is to avoid creating large open areas lacking retention, while also providing conditions suitable for development of early successional ecosystems and regeneration of shade-intolerant species. To some extent, logging systems and fuels treatments will constrain these "retained" mimicking characteristics, but burn history, prevailing winds, slope, and aspect should guide the placement of these features *along with* operational feasibility.

a.) Opening should retain an average of 30% in most of the mesic VRU's of the pre-harvest forest, but with a range of 5-50%. The majority of the retention/skips should be in the form of small (e.g., ½ to 3 acre)

intact patches.

b.) VRU's with more of a stand replacement fire history would typically leave less of the pre-harvest forest, but should leave an average of at least 20% uncut. The majority of the retention/skips should be 5-10 acres patches.

i.) Selection of Retention Acres (Skips) – Several types of areas will be candidates for location of retention acres. Including:

- Riparian buffers
- Special habitats such as seeps, rocky outcrops, and other areas of high species diversity.
- Patches dominated by hardwoods.
- Representative patches of the pre-harvest forest stand.
- Clusters of shade-intolerant tree species.

c.) Edges of regeneration units should be buffered / "feathered" with two average dom/co-dom tree lengths of an intermediate treatment along the edge of 25 - 50% of the unit. We recognize that this may be difficult to obtain, particularly where you have a very decadent stand of lodgepole or stands susceptible to windthrow.

d.) Units with a regeneration prescription should be irregular shaped, i.e. not square.

e.) Our group acknowledges the difficulty of prescribed burning small irregular sized areas located on steep slopes. We also recognize the technical challenges associated in the layout/design and operation of logging systems that will be required to implement some of our regeneration guidelines. It is our hope that the agency embraces such challenges with creativity and views them as opportunities. However, we recognize that to some extent logging system feasibility and prescribed fire limitations will sometimes hinder the full implementation of these guidelines.

Attachment 2 – Unit 147

Attachment 3 – Unit 150

Appendix 1 – Treatment Tables

Timber Harvest Treatment Summary of the Selected Alternative 2 with Modifications

UNIT	ACRES	TREATMENT	MA	LOGGING SYSTEM
1	50	IMP/S/GP	11, 16	Winter Tractor
1A	11	SW/S/GP	11, 16	Winter Tractor
2	13	ST/S/UB/PLT	11, 16	Winter Tractor
2B	48	IMP/S/GP	11	Winter Tractor
2C	9	IMP/S/GP	11, 12, 24	Winter Tractor
2D	67	IMP/S/GP	11	Winter Tractor
3	27	ST/S/UB/PLT	11, 16	Winter Tractor
3A	26	IMP/S/GP	11	Winter Tractor
3B	37	IMP/S/GP	11	Skyline
3C	13	ST/S/GP/PLT	11	Tractor
4	46	IMP/S/GP/PLT	11	Tractor
5	5	IMP/S	16, 17	Tractor
6	11	ST/S/GP/PLT	16, 17	Tractor
7	19	ST/S/GP/PLT	16, 17	Winter Tractor
8	13	ST/S/GP/PLT	16	Tractor
9	151	IMP-SW/S/UB/PLT	10, 11	Winter Tractor
10	160	IMP-SW/S/UB/PLT	10, 11	Winter Tractor
11	102	IMP-SW/S/UB/PLT	11	Winter Tractor
12	119	IMP-SW/S/GP/PLT	15, 17	Tractor
13	22	ST/S/GP/PLT	15	Winter Tractor
14	40	ST/S/GP/PLT	15	Winter Tractor
14A	26	SW/S/GP	15	Tractor
15	22	IMP/S/GP/PLT	17	Winter Tractor
16	29	Irregular SW/S/GP/PLT	17	Tractor
17	68	IMP/GP	17	Winter Tractor
18	40	Irregular SW/GP/PLT	15, 16, 17	Tractor
18A	20	IMP/S/GP	16, 24	Tractor
19	32	IMP-SW/S/GP/PLT	11	Tractor
20	41	IMP-SW/S/GP/PLT	11	Tractor
21	76	IMP-SW/S/GP/PLT	11	Tractor
22	83	IMP/S/GP	17	Tractor
23	146	IMP/S/GP	15, 17	Tractor
24	40	IMP/S/GP	15	Winter Tractor
25	139	IMP/S/UB	15	Tractor
26	29	IMP/S/GP	17	Winter Tractor
27	45	IMP/S/GP	5, 17	Tractor
28	31	IMP/S/GP	17	Winter Tractor
29	54	IMP/S/GP	11, 16	Tractor
30	62	IMP/S/GP	11, 18	Tractor
31	698	IMP/S/UB	11, 12, 18, 24	Tractor
32	75	IMP/S/GP	12	Tractor
33	85	San-Salvage/GP	15, 17	Tractor
34	144	San-Salvage/GP	17	Tractor
36	41	ST/S/GP/PLT	15	Tractor
39	40	ST/S/GP/PLT	15	Tractor
40	156	ST/S/GP/PLT	15	Tractor
41	40	CCR/S/GP/PLT	15	Tractor
42	31	IMP/S/GP	11, 12	Tractor
43	26	IMP/S/GP	11, 12	Tractor
44	28	SW/S/GP/PLT	11	Tractor
45A	105	IMP-SW/S/GP/PLT	11, 12	Tractor/Skyline
45B	39	ST/S/UB/PLT	12	Tractor
46	37	ST/S/GP/PLT	12	Skyline
47	40	ST/S/GP/PLT	12	Tractor
49	64	IMP/S/GP	11, 12, 19	Tractor
51	7	ST/S/GP/PLT	12	Tractor
52A	24	ST/S/GP/PLT	12	Tractor

UNIT	ACRES	TREATMENT	MA	LOGGING SYSTEM
53	40	ST/S/GP/PLT	11, 12	Tractor
54	9	ST/S/GP/PLT	15	Tractor
55	40	IMP/S/UB	11, 18	Tractor
56	207	IMP/S/UB	11	Tractor/Skyline
59	39	ST/S/UB/PLT	15	Tractor
61	19	CCR/S/UB/PLT	15	Tractor
62	77	ST/S/UB/PLT	15	Tractor
62A	11	San-Salvage/GP	15	Tractor
62B	20	San-Salvage/GP	15	Tractor
64	8	ST/S/UB/PLT	15	Winter Tractor
64A	28	ST/S/UB/PLT	15	Tractor
64B	10	ST/S/UB/PLT	15	Tractor
68	25	CCR/S/GP/PLT	16	Skyline
69	16	ST/S/UB/PLT	16	Skyline
70	14	ST/S/UB/PLT	16	Tractor
70T	9	ST/S/GP/PLT	16	Winter Tractor
71	18	ST/S/GP/PLT	16	Tractor
72	12	ST/S/GP/PLT	16	Tractor
73T	31	ST/S/GP/PLT	16	Winter Tractor
75	36	SW/S/UB/PLT	15	Skyline
80	110	ST-SW/S/GP/PLT	15, 16	Winter Tractor
81	36	ST/S/GP/PLT	16	Winter Tractor
82	25	ST-SW/S/GP/PLT	16	Tractor
135	16	IMP/S/UB	16	Tractor
141	24	SW/S/UB/PLT	16	Skyline
142	9	ST/S/UB/PLT	16	Skyline
143A	18	SW/S/GP/PLT	16	Tractor
144S	22	ST/S/UB/PLT	15, 16	Skyline
144T	18	ST/S/UB/PLT	15, 16, 19	Tractor
147	93	ST/S/UB/PLT	15	Tractor/Skyline
148	77	ST/S/UB/PLT	11, 15	Skyline
149	65	ST/S/UB/PLT	15	Tractor/Skyline
150	103	ST/S/UB/PLT	15	Tractor/Skyline
151	40	ST/S/GP/PLT	15	Tractor
157	54	IMP/S/UB	11	Winter Tractor
158	143	IMP-SW/S/GP	10, 11	Winter Tractor
159A	18	ST/S/GP/PLT	15	Winter Tractor
170	97	SW/S/UB/PLT	15	Skyline
173	18	IMP/S/UB	5, 19	Skyline
174	29	IMP/S/UB	11	Skyline
176	15	IMP/S/UB	11	Skyline
179	76	IMP/S/GP	11	Tractor
182	50	IMP/S/UB	11	Tractor
183	68	IMP/S/GP	6, 16, 17	Winter Tractor
185	27	ST/S/GP/PLT	15	Tractor
185N	22	ST/S/GP/PLT	15	Tractor
188	40	ST/S/UB/PLT	15, 16	Skyline
190	43	IMP/S/GP	15, 17	Winter Tractor
190A	44	San-Salvage/S/GP	15, 17	Winter Tractor
192	40	IMP/S/UB	17	Skyline
193	17	SW/GP/PLT	11	Tractor
194S	36	IMP/S/UB	11, 18	Skyline
194T	31	IMP/S/GP	10, 11, 18	Winter Tractor
195	28	San-Salvage/S/GP	16	Tractor
196	14	IMP/S/GP	11	Winter Tractor
197	24	IMP/S/GP	11, 18	Tractor
203	59	IMP/S/GP	12	Tractor
205	34	IMP/S/GP	12, 19	Tractor
207	40	SW/S/GP/PLT	15, 16, 17	Tractor
208	40	ST/S/GP/PLT	15, 16, 17	Tractor
209	24	IMP/S/GP	15	Tractor

UNIT	ACRES	TREATMENT	MA	LOGGING SYSTEM
214	6	ST/S/GP/PLT	12	Tractor
219	38	ST/S/GP/PLT	12	Tractor
219A	26	CT/YT	12	Tractor
305	43	CT/YT	11	Tractor
306	57	CT/YT	11	Tractor
307	305	CT/YT	11	Tractor
311	9	CT/YT	11, 15	Tractor
317	63	CT/YT	15	Tractor
318	131	CT/YT	15	Tractor
319	17	CT/YT	15	Tractor
327	46	CT/YT	12	Tractor
328	31	CT/YT	12	Tractor
330	9	CT/YT	15	Tractor
331	16	CT/YT	15	Tractor
332	10	CT/YT	15	Tractor
333	14	CT/YT	15	Tractor
334	22	CT/YT	15	Tractor
335	20	CT/YT	15	Tractor
337	272	CT/YT	11, 12, 15	Tractor
339	89	CT/YT	15	Tractor
340	266	CT/YT	15, 16	Tractor
343	100	CT/YT	15	Tractor
344	73	CT/YT	15	Tractor
345	45	CT/YT	15	Tractor
346	11	CT/YT	15	Tractor
347	520	CT/YT	11, 12	Tractor
348	14	CT/YT	15	Tractor
349	21	CT/YT	12	Tractor
350	26	CT/YT	15	Tractor
362	192	CCR/S/GP/PLT	12	Tractor
363	40	CCR/S/GP/PLT	12	Tractor
364	33	CCR/S/UB/PLT	12	Tractor
365	25	CCR/S/UB/PLT	12	Tractor
366	6	CCR/S/UB/PLT	12	Tractor
367	38	CCR/S/UB/PLT	12	Tractor
367A	40	CCR/S/UB/PLT	12	Tractor
368A	10	CCR/S/GP/PLT	12	Tractor
368B	6	CCR/S/GP/PLT	12	Tractor
368C	7	CCR/S/GP/PLT	12	Tractor
369	40	CCR/S/GP/PLT	12	Tractor
TOTAL = 8,845acres				

Key: GS/IMP = Group Select/Improvement IMP = Improvement Cut ST = Seed Tree w/Reserves CC = Clearcut CCR = Clearcut w/Reserves SW = Shelterwood w/Reserves PLT = Plant S = Slashing UB = Underburning GP = Grapple Pile San-Salvage = Sanitation-Salvage

Alternative 2 with Modifications - Precommercial Thinning

UNIT #	ACRES		UNIT #	ACRES		UNIT #	ACRES		UNIT #	ACRES		UNIT #	ACRES
1	30		50	55		98	48		146	1		193	31
2	15		51	11		99	30		147	43		194	23
3	31		52	18		100	24		148	27		195	44
4	2		53	16		101	46		149	5		196	38
5	3		54	11		102	4		150	8		197	49
6	20		55	5		103	19		151	39		198	19
7	29		56	32		104	31		152	24		199	21
8	21		57	73		105	11		153	30		200	9
9	19		58	27		106	9		154	14		201	51
10	21		59	63		108	15		155	18		202	63
11	29		60	74		109	18		156	7		203	47
12	11		61	7		110	12		157	62		204	26
13	24		62	3		111	30		158	13		205	41

UNIT #	ACRES		UNIT #	ACRES		UNIT #	ACRES		UNIT #	ACRES		UNIT #	ACRES
14	15		63	3		112	24		159	81		206	32
15	14		64	12		113	4		160	1		207	22
16	15		65	9		114	45		161	15		208	11
17	22		66	8		115	14		162	6		209	109
18	11		67	37		116	9		163	4		210	37
19	19		68	7		117	16		164	6		211	20
20	6		69	13		118	39		165	7		212	28
21	7		70	43		119	27		166	5		213	20
22	7		71	2		120	22		167	5		214	40
23	2		72	28		121	16		168	29		215	15
24	2		73	85		122	32		169	12		216	32
25	38		74	15		123	4		170	32		217	29
26	51		75	3		124	47		171	24		218	48
27	25		76	63		125	9		172	24		219	40
28	11		77	53		126	4		173	27		220	50
29	26		78	34		127	12		174	16		221	17
30	42		79	24		128	7		175	16		222	46
31	25		81	26		129	25		176	5		223	25
32	48		82	11		130	19		177	13		224	12
33	6		83	31		131	16		178	29		225	57
36	12		84	35		132	23		179	13		226	18
37	7		85	40		133	27		180	19		227	7
38	6		86	49		134	14		181	12		228	53
39	11		87	35		135	12		182	27		229	19
40	12		88	39		136	14		183	23		230	43
41	14		89	11		137	6		184	38		231	17
42	28		90	3		138	6		185	38		232	11
43	6		91	16		139	15		186	24		233	14
44	57		92	19		140	4		187	46		234	69
45	13		93	6		141	20		188	47		235	35
46	7		94	10		142	23		189	37		236	54
47	20		95	3		143	28		190	24		274	21
48	42		96	8		144	5		191	39		275	3
49	44		97	2		145	4		192	19		**TOTAL = 5,563 ac**	

Alternative 2 with Modifications - White Pine Daylight Thinning

UNIT NO	LYNX HABITAT	ACRES		UNIT NO	LYNX HABITAT	ACRES
237	Stand Initiation	21		256	Stand Initiation	11
238	Early Stand Initiation	8		257	Stand Initiation	28
239	Stem Exclusion	5		258	Stand Initiation	17
240	Early Stand Initiation	15		259	Stand Initiation	24
241	Stand Initiation	22		260	Stand Initiation	20
242	Stand Initiation	44		261	Stand Initiation	39
243	Early Stand Initiation	2		262	Stand Initiation	14
244	Stand Initiation	18		263	Stand Initiation	27
245	Stand Initiation	14		264	Stand Initiation	33
246	Stand Initiation	23		265	Stand Initiation	29
247	Stand Initiation	17		266	Stand Initiation	29
248	Stand Initiation	41		267	Early Stand Initiation	16
249	Stand Initiation	211		268	**Stand Initiation**	60
250	Stand Initiation	56		269	Stand Initiation	24
251	Stand Initiation	41		270	Stand Initiation	16
252	Stand Initiation	8		271	Stand Initiation	36
253	Stand Initiation	20		272	Stand Initiation	3
254	Early Stand Initiation	31		273	Stand Initiation	3
255	Stand Initiation	34		**TOTAL = 1,060 ACRES (20% = 212 ac)**		

Alternative 2 with Modifications – Proposed Fuel Treatment Units

UNIT	ACRES	TREATMENT[1]	MA		UNIT	ACRES	TREATMENT	MA
F1	174	MFT/Burn	10, 11, 12, 24		F13	24	Slash/Burn	15
F1A	17	Slash/Burn	11, 30		F13OG	5	MFT/Burn	13
F1OG	38	MFT/Burn	12		F14OG	43	MFT/Burn	13
F2	116	MFT/Burn	11, 16		F15	9	MFT/Burn	17
F3	17	MFT/Burn	11, 17		F15OG	13	MFT/Burn	13
F3OG	20	MFT/Burn	13		F16	73	Slash/Burn	11, 12
F4	17	Slash/Burn	10		F18	568	Burn	2
F8	52	MFT/Burn	10, 17		F19	110	Slash/Burn	17
F11OG	54	Slash/Burn	13		F45	125	Slash/Burn	11, 12
F12	11	MFT/Burn	11		**TOTAL = 1,486 acres**			

MFT = Mechanical Fuel Treatments Slash = hand slashing without the potential for mechanical product removal.

Alternative 2 with Modifications - Fuels and Wildlife Units

UNIT	ACRES	TREATMENT[1]		UNIT	ACRES	TREATMENT
FW501	281	Slash, Spring/Fall UB		FW544	576	Slash, Spring/Fall UB
FW502	159	Slash, Spring/Fall UB		FW545	429	Spring/Fall UB
FW503	215	Slash, Spring/Fall UB		FW577	147	Slash, Spring/Fall UB
FW509	32	Slash, Spring/Fall UB		FW589	335	Spring/Fall UB
FW511	34	Slash, Spring/Fall UB		FW5109	170	Slash, Spring/Fall UB
FW512	51	Slash, Spring/Fall UB		FW5111	46	Slash, Spring/Fall UB
FW516	39	Slash, Spring/Fall UB		FW5122	112	Spring/Fall UB
FW521	41	Slash, Spring/Fall UB		FW5125	14	Slash, Spring/Fall UB
FW522	642	Slash, Spring/Fall UB\		FW50601	294	Slash, Spring/Fall UB
FW524	484	Slash, Spring/Fall UB		FW50602	913	Slash, Spring/Fall UB
FW525	84	Slash, Spring/Fall UB		FW51101	575	Slash, Spring/Fall UB
FW533	214	Slash, Spring/Fall UB		FW51102	272	Slash, Spring/Fall UB
FW535	142	Slash, Spring/Fall UB		FW51103	743	Slash, Spring/Fall UB
FW536	307	Spring/Fall UB		FW53401	596	Slash, Spring/Fall UB
FW539	121	Slash, Spring/Fall UB		FW53402	581	Slash, Spring/Fall UB
FW540	538	Slash, Spring/Fall UB		FW53403	646	Spring/Fall UB
FW543	215	Slash, Spring/Fall UB		**TOTAL = 10,049 acres**		

UB = Underburn

Appendix 2 – Design Features of Alternative 2 with Modifications

Appendix 2 describes the design features and management measures that will be applied to this project to protect resources in all action alternatives.

Appendix 2 – East Reservoir Project Management Measures & Design Features

Trails and Roads: Timber Sale Standard Provision B(T)6.22, Protection of Improvements, will be included in all timber sale contracts. It will require the purchaser to protect specified improvements, such as trails, roads and fences. Slash disposal adjacent to the Lake Koocanusa Scenic Byway (MSH 37) and Lake Koocanusa is critical to meeting KNFP VQOs.

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Soil: Refer to Appendix E for specific management requirements for the soil resource.

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Sensitive Plants: Legal and biological requirements for the conservation of endangered, threatened, proposed, candidate and sensitive plants will be met. These species have been identified in cooperation with other agencies such as the US Fish and Wildlife Service (FWS) and Montana Fish, Wildlife and Parks (FWP). Plant surveys will be completed prior to any ground-disturbing activities. Emphasis for surveys will be placed on areas with moderate-to-high potential to provide sensitive plant habitat. These surveys will be conducted by the District Botanist or a qualified biological technician. If any of these plant species are located prior to or during implementation of any management activities, the activity will be altered so that proper protection measures could be taken. Timber sale contract provision B(T)6.25, Protection of Habitat of Endangered Species, will be included in any subsequent timber sale contract. If necessary, additional modifications will occur through creation of special treatment zones or by relocating unit boundaries to avoid negative impacts. Disturbance to any sensitive plant populations observed during sale activity will be avoided through cooperation between sale administrators and sale purchaser. Surveys for PTES plants of in-stream work areas to improve pool quantity and quality will be completed before implementation.

- Retain all cottonwood, aspen and birch in all harvest units except in designated skid trails.
- Avoid burning and logging through the western pearl flower (*Heterocodon rariflorum)* population in Unit 16 by creating a special treatment zone.

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Noxious Weeds: Noxious weeds can have a large impact on not only rare plant habitat but any native plant habitat the following measures will be used to manage concerns for the spread of noxious weeds.

- **Winter Tractor Units to Avoid Noxious Weed Spread:** Winter tractor operations for Units 2B, 2C, 2D, 3A, 9, 10, 11, 17, 28, 157, 158, 158A, 190, 194T, 196, 305, 306, 307, COE1 and COE3.
- Certified weed-free forage is required for use on all national forest lands in Montana (36 CFR 261.50)
- Treat existing noxious weeds on roads to be reconstructed or stored prior to that activity, (if possible schedule spraying two or more seasons before activities are expected to occur to reduce the amount of viable weed seed stored in the soil).
- Treat existing noxious weeds in gravel/rock pits, inspect these sources for weeds and treat before material is transported.
- Survey and pre-treat existing noxious weeds on proposed trailhead construction site, and access sites for in-stream work.
- Require weed free certified straw for all construction, reconstruction, and restoration activities.
- Seed and fertilize stored roads with certified weed free seed immediately following restoration activities.
- Limit scarification objectives to the minimal required to meet reforestation objectives.
- Pressure-wash logging equipment, road maintenance and restoration equipment before entering the analysis area.
- Require timber sale purchaser to treat existing noxious weeds along haul routes the first operational season for weed spraying (spring or early summer)
- Seed newly constructed roads, trailheads, landings and major skid trails with certified weed-free seed.
- Prevent road maintenance machinery from blading or brushing through known populations of new invaders. In areas where weeds are established, (and activities are opening and blading restricted or closed roads with significantly lesser infestations); brush and blade road systems from un-infested segments of road systems to infested areas. Limit brushing and mowing to the minimum distance and height necessary to meet safety objectives in areas of heavy weed infestations
- Minimize soil disturbance and mineral soil exposure during activities. Soil disturbance should be no more than needed to meet project objectives. This includes not exceeding recommended mineral soil exposure for site preparation in regeneration harvest units; and utilizing timing and designated skid trails to minimize mineral soil
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exposure in harvest units.

- Survey proposed burn units for noxious weeds. Determine the risk of weed spread with prescribed fire. If there is a risk of spread beyond the road corridor, defer burning until the weeds can be treated or ensure post treatment funding for weed control.
- Survey proposed access for mechanized in stream for noxious weeds. Determine the risk of spread with the associated activity. If there is risk of spread, pre-treat the area before activity.
- Continue to monitor/survey the analysis area for new invader weed species. Monitor weed population levels in treated areas, with particular emphasis on haul routes, stored and decommissioned roads, and landings. Retreat as funding allows.
- Treat and sign sites if new invaders are located and defer ground disturbing activities within those sites until the weed specialist determines the site is no longer a threat, and approves those activities.
- Site-specific guidelines will be followed for weed treatments within or adjacent to known sensitive plant populations. All future treatment sites will be evaluated for sensitive plan habitat suitability; suitable habitats will be surveyed as necessary prior to treatment.
- All noxious weed control activities will comply with state and local laws and agency guidelines.
- As per the 2007 KNF Invasive Plant Management EIS and ROD, all herbicides used in the analysis area will be applied according to the labeled rates and recommendations to ensure the protection of surface water, ecological integrity and public health and safety. Herbicide selection will be based on target species on the site, site factors (such as soil types, distance to water, etc.), and with the objective to minimize impacts to non-target species.
- Design road storage to allow passage of a 4-wheeler to continue treatment of hawkweeds and common tansy in the future. Hawkweed and common tansy populations will continue to expand even after the template has re-vegetated.
- Keep administrative traffic on closed roads to a minimum. Whenever possible, time activities prior to seed set of the primary weed species or emphasis weeds on a given road.
- Release bio-control agents on applicable sites, as they become available, and funding allows.
- Plan follow up noxious weed treatment the spring or early summer, following final purchaser blading of all haul roads if funds allow (this will be funded with appropriated or KV dollars).
- **Burning and Noxious Weed Spread:** A decision matrix will be developed to address weed concerns and to prioritize the units for burning based on desired objectives of the burning. This decision matrix will identify potential weed concerns and identify target habitat enhancement or fuel reduction objectives. This way weed control efforts can focus on particular species prior and post-burning.
- Design road storage to allow passage of a 4-wheeler to continue treatment of hawkweeds and common tansy in the future. Hawkweed and common tansy populations will continue to expand even after the template has re-vegetated.

Burning and Noxious Weed Spread

A decision matrix will be developed to address weed concerns and to prioritize the units for burning based on desired objectives of the burning. This decision matrix will identify potential weed concerns and identify target habitat enhancement or fuel reduction objectives. This way weed control efforts can focus on particular species prior and post-burning.

Pile Burning Emissions

The amount of smoke emissions, resulting from prescribed burning of natural and activity fuels will be mitigated by four general methods: fuel loading reduction, reduction in the amount of fuel consumed, flaming combustion optimization, and impact avoidance.

Fuel Loading Reduction: The KNF has encouraged, through sale contract provisions, utilization of sub-merchantable material. Purchasers may be required to pay for, and therefore encouraged to utilize, top wood smaller than the normal utilization standard. These measures help decrease the amount of woody fuel, thus reducing the amount of smoke produced during burning.

Reduction in the Amount of Fuel Consumed: The reduction of the amount of fuel consumed by prescribed burning will be accomplished by burning under higher fuel moisture conditions as long as it still makes these fuels less available for consumption, thereby reducing the fuel consumed. Sometimes this can be part of the resource objective to retain coarse woody debris on the site.

Flaming Combustion Optimization: Methods that increasing the flaming combustion phase will be used when prescribed burning is determined to be the most appropriate fuel treatment. Concentration of logging slash by

whole tree yarding or excavator piling increases the amount of material consumed during flaming combustion and also allows material to be burned in the late fall when the risk of escape is low. Purchasers are required to construct piles so they are compact and free of excess soil.

Impact Avoidance: Smoke impact avoidance will be accomplished through daily monitoring of airshed conditions. Burns will be coordinated with Montana/Idaho Smoke Monitoring Unit. This will help ensure smoke impacts are minimized and burning only occurs when dispersion is forecasted to be good and cumulative effects are not likely.

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Soil and Water:

1) Timber Sale Contract Provisions to be Included

CT6.3 - Plan of Operations, **BT6.4**, **CT6.4** - Conduct of Logging, **BT6.42** - Skidding and yarding, **BT6.422** - Landings and Skid Trails, **BT6.6**, **CT6.6** - Erosion Prevention Control, **BT6.64** - Skid Trails and Fire Lines, **BT6.5 –** Stream Course Protection, **CT6.62** - Noxious Weed Control, **BT5.2**, **CT5.2** - Specified Road Construction, **BT5.4**, **CT5.4** - Road Maintenance, **CT6.603** - Road Obliteration.

2) Best Management Practices (BMPs) - Implementation of the BMPs listed in Appendix C.

3) Riparian Habitat Conservation Areas (RHCAs)

Implementation of the KNFP RHCA widths for the units, shown in Appendix B, is required to meet KNFP standards as amended by INFS. Also if any additional streams are found during layout they will also be buffered to meet this requirement.

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Aquatic Species

Measures listed under soil and water, including implementation of BMPs and use of RHCAs as prescribed in INFS will protect fish.

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Winter Tractor Units to Avoid Over 15% and DSD for Alternatives 3:

Units: 2, 3, 7, 12, 13, 14, 15, 24, 26, 73T, 74T, 159A, 183, 190A, 305, 307, 311, 318, 319, 327, 328, 334, 335, 339, 340, 343, 344, 345, 346, 349, 350, COE4, COE5T, COE6, F1OG, and F2T1.

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Forest Vegetation:

In addition to the appropriate BMPs, riparian guidelines and standard contract clauses, the following management measures and monitoring will be included:

a. All harvest units will retain 7-30 tons per acre of downed woody material (or recruitment) greater than 3” in diameter to provide nutrient recycling and habitat for mammals and invertebrates. The volume and distribution of material may be subject to specific site conditions such as within the wildland urban interface. The tons retained by VRU are described previously in Table 3.11.

b. All harvest units will be designed to retain adequate levels of replacement snags to provide for cavity-associated wildlife species, genetic seed reservoirs, relic overstory, and long-term soil productivity. Replacement trees will be scattered throughout harvest units to the extent possible. A minimum of 8-10 replacement snags per acre will be retained. Where not consistent with your description of a clearcut with 4-8 trees retained possible within safety requirements, sound snags may be marked for retention. If they are felled for safety purposes, they will be retained on site. Silvicultural and burning prescriptions will be prepared with the goal of protecting large diameter relic trees, during site preparation and fuels treatment.

c. A marking review will be performed by a silviculturist on a minimum of 10% of proposed units to ensure marking guides are being implemented as per the prescription.

d. All tractor harvest units with an intermediate harvest prescription will have designated skid trails to facilitate removal of designated material while minimizing damage to less than 15% of the residual trees.

e. Harvest treatments will be designed to mimic natural process, and marking guides will emphasize working with existing stand structures, and will not result in a uniform or evenly spaced residual stand or an evenly spaced seed trees or relic trees.

f. If insect activity is present in the area, prescribed fire in dryland types may be postponed to a later date to give the residual trees time to recover.

g. Spring burns in the dryland types will be implemented before the ponderosa pine and bunchgrass are actively growing to minimize damage to native grasses.

h. Maintain old growth characteristics within old growth character stands (Green et al, 1992; USDA Forest Service, 1987a).

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Wildlife:

Minimize Disturbance to Raptors: If raptor-nesting territories are observed, avoid disturbance when possible, during the nesting/fledgling period (5/15-8/15). Include in sale contract if sites are known prior to selling. Consult with Wildlife Biologist on specific buffers and disturbance period dates. Utilize this criterion specifically on Unit 68 for Alternatives 2 and 3 - Pre-sale and harvest – all alternatives.

Protect Cripple Horse Goshawk Nest:

1. No management activities should occur within 0.5 miles of nest area (as mapped) between 3/1 and 8/30;
2. Route helicopter flights away from nest site and PFA as shown on territory maps (Project File).
3. Activities greater than ½ mile from the nest site should not occur until after July 15th or prior to April 1 (also see Criterion #2).

   All criteria applicable to all alternatives for pre-sale, during and post-sale activities.

Maintain Cavity-Nesting Habitat: Where snag numbers are insufficient to meet snag levels by VRU (identified in the Snag Section at the 100% level) existing DF, WL and PP snags greater than 10" dbh and 10 feet in height will be marked and protected during timber harvest and site preparation as long as safety requirements are met. Merchantable trees (live or dead) will be reserved (Provisions CT2.3# and CT6.32#) C2.3# and C6.32# -- provisions were never intended for snags – intended for superior seed trees, research trees or high value wildlife trees (nest trees)). C6.32# - requires liquated damages ($) for damage. Not advisable to use if snag levels are still not met. If felled for safety, they will be left on site. Maintain the largest snags first. Favor trees further than one tree length from the road prism or any external boundary - Pre-sale and harvest – all alternatives.

Provide for Future Cavity-Nesting Habitat, Down Woody Habitat Recruitment, and Structural Diversity: KNF snag management protocol will be utilized to provide adequate snags for wildlife habitat. Units in MA 15 will be managed at the 40% level as prescribed in the KNFP. All other MAs will be managed at the 100% cavity habitat effectiveness level. Pre-sale – all alternatives.

Leave Tree Protection: Evenly distribute slash to protect leave trees. Pre-sale - all alternatives.

Maintain Winter Range Integrity: Restrict mechanized activities associated with logging and slashing off Roads 4885, 4886, 6271, 4916 (Dec. 1 – June 30); 6274, 4908A/B (Oct 15 – June 30); 4890, 5298 Sept 1 – May 30) to be consistent with the Road Closures as shown and applicable. Pre-sale, harvest and site prep – all alternatives. Winter logging will be required in Unit 1 in Alternative 2 and Units 1, 1A, 2B, 2C, 2D, 3A, 9, 10, 17, 28, 157, 158, 158A, 190, 194T, 169, COE1and COE3 for Alternative 3.

Provide for Wildlife Security: Determine the time of road restrictions involved with timber sales in the pre-sale roundtable discussion. Implement new road restrictions after timber harvest where applicable and maintain existing restrictions to the public during all operations. Pre-sale, Post-sale – all alternatives. This criterion could vary by MA (e.g. summer range versus winter range) and could be influenced by other management boundaries such as Bears Outside Recovery Zone (BORZ). Generally, roads entering into or within these management boundaries will not be open to the public while treatment activities are occurring.

Meet Standards and Guides of the Lynx Amendment for Management in Lynx Habitat: including use of prescribed fire. Prior to activity – Alternative 3 as described in effects analysis, Chapter 3 of this document. If these are for alts, need to correct the PA.

Meet ESA Requirements: If critical habitat is identified during implementation of the proposed activities, special protection measures will be implemented by including provision CT6.251 in all applicable timber sale contract packages. This provision is mandatory. Contract prep and logging – all alternatives.

Maintain Minimum/All Associated Old Growth Characteristics within Old Growth Character Stands (Green Et Al, 1992; USDA Forest Service, 1987a): In the MA 13 portions of Units F1OG, F3OG, F11OG, F13OG, F14OG and F15OG no merchantable material will be removed. Outside MA 13 in these units, products (e.g. biomass) may be removed. Harvest Prescription, Sale Prep – Alternative 2. Ensure burning is planned to minimize impact on the large old tree component and subsequent risk of insect infestation. May want to defer burning until MPB population has subsided.

Protect Specialized Wildlife Habitats: Protect currently unknown (not mapped) specialized habitats (e.g. wetlands, fens, bogs, elk wallows, nests, etc.) found during timber sale preparation activities with appropriate buffers. When new sites are found consult wildlife biologist, fish biologist or hydrologist for direction. Pre-sale and during activities – all alternatives.

Temporary Roads within the Tobacco BORZ: Portion of the East reservoir Analysis area will be returned to

contour immediately following harvest and slash activities (units) or within one active bear year (4/1 to 11/30), unless unforeseen circumstances (e.g. weather) prevents completion of the treatment units accessed by these temporary roads. Temporary roads needed for another work season will be closed with the appropriate restriction device (i.e. rods, gate, earth barrier, etc.).

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Heritage Resources:

Heritage resource surveys were completed on all treatment units. The action alternatives were designed to protect known cultural sites, provide for protection of sites discovered during implementation, and protect treaty rights. These concerns will be addressed through ongoing consultation with tribal representatives. Appropriate Timber Sale Contract Provisions will be included in any timber sale contract. The appropriate provision specifies that the Forest Service may modify or cancel the contract to protect cultural resources, regardless of when they were identified.

Winter logging will be required for Unit 1 in Alternative 2, and Units 1 and 1A for Alternative 3.

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Scenic Resource:

To meet visual quality objectives the following measures will be taken:

Units 2, 3, 6, 16, 18 – High level of slash disposal along Highway 37.
Units 7, 8, 59, 62, 80, 147, 148, 149, 150, 151 – 10 to 12 trees/acres leave trees in unit.
Units 41, 81 – Leave tree islands (1 – 2 acres) left in unit.
Unit 6 – 10 to 15 tress/acre leave trees in unit.

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U.S. Corps of Engineer Land: The following BMP must be employed within the boundary of recorded archaeological sites and/or in areas where additional archaeological identification work cannot be completed prior to project implementation.

A) Soil and duff moistures must be high enough to prevent thermal damage to artifacts that may be present in the lower duff layers or soil. Duff moistures of greater than 120% tend not to burn (Timmons, et al. 1996); consequently, the burn shall take place in the spring and/or late fall when conditions favor high duff moistures.

B) Any stumps within recorded archaeological sites that will be burned must be protected by wetting or foaming prior to ignition.

C) To keep excavation of soil to a minimum, control lines for prescribed burn operations must be located on existing roads, trails, topographical breaks, and any other natural barriers. Wet lines and/or foam lines are strongly recommended.

D) Slash piling, for the purpose of burning, will not occur within recorded archaeological sites. Many areas on COE fee owned land considered high probability: Slash piling, for the purpose of burning, shall be avoided where feasible.

E) Mechanical timber harvest must be done on frozen ground within recorded archaeological sites and high probability areas and in accordance he following stipulations.

1. Logging must be performed over frozen ground or over an accumulation of a minimum of one foot of compacted snow.
2. A rubber-tired skidder shall be used.
3. Logs will be limbed at the stump.
4. Dispersed skidding.
5. Logging landings shall be designated in areas outside of recorded archaeological sites and high probability areas. Landings will be clearly delineated by the COE archaeologist on the ground for the sale administrator and the contractor.
6. Slash piling will not occur within any recorded archaeological sites or high probability areas. Appropriate areas must be clearly delineated by the COE archaeologist on the ground for the sale administrator and the contractor.
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Appendix 3: East Reservoir Project Monitoring Plan

RESOURCE	OBJECTIVE	TIMING	METHODOLOGY	RESPONSILBLITY
Forest Vegetation	Monitor silvicultural prescription implementation	After project implementation	Check all units following harvest to document existing condition, and recommend future stand treatment needs	Silviculturist
Forest Vegetation	Ensure reforestation success	After project implementation	Monitor all regeneration units for reforestation success.	Silviculturist
Soils	Ensure compliance with R1 soil quality standards	During the life of the timber sale	Monitor harvest units for compliance with R1 soil quality standards as described in the KNF Plan Monitoring and Evaluation Report for Fiscal Year 2011 (Project File).	Soil Specialist
Fuels	Ensure the fuel treatments are effective	After project implementation	Monitor the fuel treatments on a minimum of 10% of the units to ensure objectives are met.	Fuels Specialist
Botany	Ensure viability for sensitive plants, particularly Taper-tipped onion	Through the prescribed burning covered in project	Monitor the effect of weed control and burning on rare plant populations. Monitor overall weed control efforts. Monitor status of sensitive plants within the project area during and after treatments.	Botanist
Wildlife #1	Collect reserve tree and snag numbers	During the marking of the regeneration units that require leave tree marking	Conduct a representative sample of units within each VRU (2 units in each VRU represented in the Analysis Area). This item will provide baseline numbers for monitoring items #2 and #3 below. The timber marking crew will tally snag and reserve tree numbers during marking, and only in those regeneration harvest units with leave tree marking.	Timber/Pre-Sale Marking Crew
Wildlife #2	Monitor snag retention	After harvest and site-preparation has occurred, but generally within five years from end of harvest.	Within those regeneration harvest units surveyed in #1(above) to determine if snag management strategies are meeting Forest Plan cavity habitat direction. Work will be completed concurrent with reforestation surveys.	Silviculture Crew
Wildlife #3	Monitor reserve tree retention within those regeneration harvest units surveyed in #1 (above).	After harvest and site-preparation have occurred, but generally within five years from the harvest.	Maintenance of reserve trees insures that future cavity-nesting habitat and down woody recruitment are available to help provide future denning, feeding, and nesting habitat. Work will be completed concurrent with reforestation surveys.	Silviculture Crew
Wildlife #4	Monitor the changes created by vegetative treatments on the attributes of old growth in treatment units	Pre-treatment surveys. Two post-treatment surveys, at one and five years.	Conduct pre- and post-treatment surveys to collect vegetation data on a representative sample of units. Data must, at a minimum, include snags, coarse woody debris, large trees, basal area, canopy closure, and structural layers (Green et al 1992). Conduct these surveys to collect vegetation data using the common stand exam process. Data collected by the Common Stand Exam has broader application both forest and region wide.	District Silviculturist, Fire Management Officer

RESOURCE	OBJECTIVE	TIMING	METHODOLOGY	RESPONSILBLITY
Hydrology	Ensure continued stream function, stability, and high water quality	After project implementation	Resurvey all Rosgen Level II and KNF Level III Fish Habitat sites in East Reservoir analysis area.	Hydrologist
Hydrology	Implementation and effectiveness of applicable BMPs.	During and immediately following project activities.	BMP inspection reports and/or Timber Sale Inspection Reports. Inspection reports will be completed as part of the annual district BMP effectiveness monitoring program.	Timber Sale Administrator, Engineering Representative/COR, Hydrologist, IDT.
Hydrology	Ensure continued stream function, stability and high water quality.	On going	Monitor TSS and discharge at the USGS site.	Hydrologist
Hydrology	Monitor protection and management of stream channels, riparian areas, and riparian habitat conservation areas during timber harvest and road reconstruction.	During implementation of activities that occur in or near riparian areas or wetlands.	This monitoring will occur as a fundamental component of timber sale administration.	Timber Sale Administrator, Engineering Representative/COR, District Hydrologist
Hydrology	Monitor success of revegetation efforts on disturbed sites.	During initial seeding and the years following	Field inspection of seeded sites at the close of the sale and 2 to 3 years after the sale. Additional seeding will then be done if the success rate is low.	Timber Sale Administrator, District Hydrologist
Hydrology	Water quantity and quality monitoring.	On going	Field collection of stream flow, temperature, and suspended sediment samples, following USGS protocols	District Hydrologist
Hydrology	Channel geometry monitoring to assess trends in channel condition	Every three to five years for sites within the planning subunit	Repeated cross-section and channel geometry surveying in designated and monumented reaches	District Hydrologist
Weeds	Noxious weed control	On going	Monitor/survey the project area for new invader weed species. Monitor weed population levels in treated areas, with particular emphasis on haul routes, stored roads, and landings. Pre- and post-activity surveys for areas scheduled for burning	Weed Specialist, Botanist
Recreation	Ensure compliance with road/trail closures.	On going	Bi-annual monitoring of motorized vehicle closure devices and effective closure of ATV trespass trails.	Recreation Specialist

Appendix 4: Forest Plan Amendments

East Reservoir Project-Specific Amendment #1

The Kootenai National Forest Plan, page III-64, in Management Area 15 (MA15) is modified for Recreation Standard #4 – meeting Visual Quality Objective of maximum modification.

Unit 40 (156 acres) is proposed as an over 40 acre regeneration harvest, but does not mimic the large historic patch size of 5,000 to 100,000 acres. However, it is placed adjacent to past harvests that are recovered, but are within the early-successional stage. By these units being blocked up with other early-successional stages, this larger block mimics historic conditions and will move into the future as a connected patch of interior forest (DEIS, Vegetation Report, p. 45, 46, 47). Even though the unit will be viewed from a SL3 (Significance Level 3 = very low) road, visually, due to large unit size, position of unit (face terrain), low number of leave trees (seedtree harvest, 93% of canopy removed) the proposed treatment would not meet KNFP standards of maximum modification for scenic resources (FEIS, Ch.3, pg. 367).

Unit 75 (36 acre shelterwood) sits next to Unit 188 (40 acre seedtree) creating an opening in excess of 40 acres. This treatment would be effective at reducing hazardous fuels, reducing crown fire potential, and improving fire suppression efficacy. Separately, these units meet QVOs but they are located adjacent to each other on the ground making a 76 acres seedtree/shelterwood harvest which removes 90% of the canopy. Due to large unit size, position of unit, low number of leave trees, the proposed treatment would not meet KNFP standards of maximum modification for scenic resources (FEIS, Ch.3, pg. 370, 372). This area is a very low visual significance level.

Unit 147 (93 acre seedtree), Unit 148 (77 acre seedtree), Unit 149 (65 acre seedtree) and Unit 150 (103 acre seedtree) are proposed for over 40 acre regeneration harvests. These units were designed to tie in with past regeneration harvests to simulate a fire that would have burned from the creek bottom to the ridge top due to continuous fuels and favorable topography. Treatments of this scale are more likely to disrupt large fire growth and spread and assist in the efficacy of suppression efforts when a fire occurs in these areas. Fire modeling indicates these areas are at risk of experiencing stand-replacing crown fire behavior if left untreated. With regard to wildlife, this strategy may result in openings that may not be fully utilized by elk as foraging areas, however, creating these openings reduces edge effect and fragmentation that would occur with greater number of openings of lesser acreage.

When considered in combination with existing adjacent openings on National Forest System lands these regeneration harvests will create six openings larger than 40 acres in size. Opening sizes will decrease over time as regeneration is established and grows. It was estimated that regeneration openings will be hydrologically recovered when they are approximately 25-30 years old. By the time a regeneration opening is this old, the conifer regeneration is tall enough to maintain enough canopy cover above the average winter snow depths to moderate rates of snow melt. The time required to realize hydrologic recovery is longer than the recovery needs of other resources and is therefore the most conservative estimate of recovery for openings caused by even-aged regeneration harvest.

Alternative 2 with Modifications will reduce tree canopy from fully stocked to a seedtree and/or shelterwood prescription in concert with exceeding 40 acre limitation as directed by NFMA. Treatment of these units supports purpose and need statement to re-establish, restore and retain landscapes that are more resistant and resilient to disturbance (insect and disease infestations, fire) and uncertain environmental conditions such as climate change.

UNIT #	HARVEST METHOD	TOTAL OPENING (acres)	BENEFITING RESOURCE
40	Seedtree	156	**Wildlife:** Reduce edge effect and fragmentation by blocking up treatment areas together versus 40 acre blocks.
75	Shelterwood	36	**Wildlife:** Creating openings over 40 acres better approximates the patch size and pattern of habitat that would have been available under natural processes and reduce edge effect and fragmentation that would occur with a greater number of openings of lesser acreage.
147	Seedtree	93	**Wildlife:** species associated with less edge effect and interior forest-creating openings over 40 acres better approximates the patch size and pattern of habitat that would have been available under natural processes and reduce edge effect and fragmentation that would occur with a greater number of openings of lesser acreage.
148	Seedtree	77	
149	Seedtree	65	

150	Seedtree	103	**Fuels:** Reduce fuels and provide a fuel break immediately adjacent to a major power transmission line. By locating the units adjacent to past treatments they will be more effective at disrupting large fire growth and be more conducive to fire control actions.

The Forest Plan states, "If it is determined during project design that the best way to meet the goals of the Forest Plan conflicts with a Forest Plan standard, the Forest Supervisor may approve an exception to that standard for the project"

This project-specific amendment allows achievement of the overall Forest Plan goal for MA15 which is timber production using various standard silviculture practices while providing for other resource values such as soil, air, water, wildlife, recreation and forage for domestic livestock (FP, Vol. 1, pg. III-64).

Project-specific amendments must comply with the National Environmental policy Act procedures. Compliance with these procedures and rationale for this project-specific amendment is contained in the East Reservoir Project DEIS, FEIS and draft ROD.

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Project Specific Amendment #2:

The Kootenai National Forest Plan, page III-48, in Management Area 12 (MA12) is modified for Recreation Standard #2 – meeting Visual Quality Objective of maximum modification in areas of low visual significance, modification in areas of moderate visual significance, and partial retention in areas of high visual significance, unless infeasible when attempting to meet the goals of the management area.

Unit #362 (192 acres) cannot meet MA 12 visuals direction because it is planned for regeneration treatment (clearcut) to exceed 40 acres with the resulting visual quality objective (VQO) of unacceptably moderate (FEIS, Ch.3, pg. 373) due to reducing tree canopy from fully stocked to a clearcut.

Treatment of Unit 362 supports purpose and need statement to re-establish, restore and retain landscapes that are more resistant and resilient to disturbance (insect and disease infestations, fire) and uncertain environmental conditions such as climate change.

When considered in combination with existing adjacent openings on National Forest System lands these regeneration harvests will create six openings larger than 40 acres in size. Opening sizes will decrease over time as regeneration is established and grows. It was estimated that regeneration openings will be hydrologically recovered when they are approximately 25-30 years old. By the time a regeneration opening is this old, the conifer regeneration is tall enough to maintain enough canopy cover above the average winter snow depths to moderate rates of snow melt. The time required to realize hydrologic recovery is longer than the recovery needs of other resources and is therefore the most conservative estimate of recovery for openings caused by even-aged regeneration harvest.

Alternative 2 with Modifications will reduce tree canopy from fully stocked to a seedtree and/or shelterwood prescription in concert with exceeding 40 acre limitation as directed by NFMA. Treatment of these units supports purpose and need statement to re-establish, restore and retain landscapes that are more resistant and resilient to disturbance (insect and disease infestations, fire) and uncertain environmental conditions such as climate change.

UNIT #	HARVEST METHOD	TOTAL OPENING (acres)	BENEFITING RESOURCE
362	Clearcut	192	Reduce fuels and provide a fuel break immediately adjacent to a major power transmission line. By locating the units adjacent to past treatments they will be more effective at disrupting large fire growth and be more conducive to fire control actions.

The Forest Plan states, "If it is determined during project design that the best way to meet the goals of the Forest Plan conflicts with a Forest Plan standard, the Forest Supervisor may approve an exception to that standard for the project"

This project-specific amendment allows achievement of the overall Forest Plan goal for MA12 which is to maintain or enhance nonwinter big-game habitat and produce a programmed yield of timber (FP, Vol. 1, pg. III-48).

Project-specific amendments must comply with the National Environmental policy Act procedures. Compliance with these procedures and rationale for this project-specific amendment is contained in the East Reservoir Project DEIS, FEIS and draft ROD.

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Project Specific Amendment #3:

The Kootenai National Forest Plan, page III-69 in Management Area 16 (MA16) is modified for Recreation Standard #4 – meeting Visual Quality Objective of modification.

Unit #73T (31 acres) and Unit 188 (40 acres) are adjacent to one-another. Together they cannot meet MA 16 visuals direction because the planned for regeneration treatment (seedtree) combines to exceed 40 acres with the resulting visual quality objective (VQO) of maximum modification (FEIS, Ch.3, pgs. 370, 372) due to reducing tree canopy from fully stocked.

When considered in combination with existing adjacent openings on National Forest System lands these regeneration harvests will create six openings larger than 40 acres in size. Opening sizes will decrease over time as regeneration is established and grows. It was estimated that regeneration openings will be hydrologically recovered when they are approximately 25-30 years old. By the time a regeneration opening is this old, the conifer regeneration is tall enough to maintain enough canopy cover above the average winter snow depths to moderate rates of snow melt. The time required to realize hydrologic recovery is longer than the recovery needs of other resources and is therefore the most conservative estimate of recovery for openings caused by even-aged regeneration harvest.

Alternative 2 with Modifications will reduce tree canopy from fully stocked to a seedtree prescription in concert with exceeding 40 acre limitation as directed by NFMA. Treatment of these units supports purpose and need statement to re-establish, restore and retain landscapes that are more resistant and resilient to disturbance (insect and disease infestations, fire) and uncertain environmental conditions such as climate change.

UNIT #	HARVEST METHOD	TOTAL OPENING (acres)	BENEFITING RESOURCE
73T, 188	Seedtree	258	Creating openings over 40 acres better approximates the patch size and pattern of habitat that will have been available under natural processes and reduce edge effect and fragmentation that will occur with a greater number of openings of lesser acreage.

The Forest Plan states, "If it is determined during project design that the best way to meet the goals of the Forest Plan conflicts with a Forest Plan standard, the Forest Supervisor may approve an exception to that standard for the project"

This project-specific amendment allows achievement of the overall Forest Plan goal for MA16 which is to produce timber while providing for a pleasing view (FP, Vol. 1, pg. III-69).

Project-specific amendments must comply with the National Environmental policy Act procedures. Compliance with these procedures and rationale for this project-specific amendment is contained in the East Reservoir Project DEIS, FEIS and draft ROD.

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Project Specific Amendment #4:

The Kootenai National Forest Plan, page III-49, is modified for Wildlife and Fish Standard #7- to maintain movement corridors of at least two site distances (400 feet) between openings, and generally not to exceed openings over 40 acres.

Alternative 2 with Modifications proposes one unit with acreage on MA12 land that result in openings that do not meet this standard. Unit 362 (clearcut) results in a 192 acre opening on MA12. Therefore, a site-specific KNFP amendment is necessary for this unit.

Treatment of Unit 362 supports purpose and need statement to re-establish, restore and retain landscapes that are more resistant and resilient to disturbance (insect and disease infestations, fire) and uncertain environmental conditions such as climate change.

When considered in combination with existing adjacent openings on National Forest System lands these regeneration harvests will create six openings larger than 40 acres in size. Opening sizes will decrease over time as regeneration is established and grows. It was estimated that regeneration openings will be hydrologically recovered when they are approximately 25-30 years old. By the time a regeneration opening is this old, the conifer regeneration is tall enough to maintain enough canopy cover above the average winter snow depths to moderate rates of snow melt. The time required to realize hydrologic recovery is longer than the

recovery needs of other resources and is therefore the most conservative estimate of recovery for openings caused by even-aged regeneration harvest.

Alternative 2 with Modifications will reduce tree canopy from fully stocked to a seedtree and/or shelterwood prescription in concert with exceeding 40 acre limitation as directed by NFMA. Treatment of these units supports purpose and need statement to re-establish, restore and retain landscapes that are more resistant and resilient to disturbance (insect and disease infestations, fire) and uncertain environmental conditions such as climate change.

Amendment #4 amends the edge effect and movement corridors in MA 12. One 192 acre unit results in less edge effect than a number of units (in this case up to five units at 40 acres each) with forested corridors of 600 feet separating the units. Reducing edge effect is favorable for many resident species, such as fisher, brown creeper, goshawk and lynx, and once the 192 unit re-establishes hiding cover (approximately 15 years) a large block of uniform interior forest will result for those species more associated with interior forest habitats. Contrarily, edge creation is beneficial to many other hawk species such as red-tails and other birds including black-headed cowbirds for both foraging and nesting. Any edge creation will benefit these species in the 15 to 30 years immediately following harvest. However, as time progresses, these larger patch sizes and subsequent interior forest development will become more beneficial to those interior species listed previously by creating areas for movement, nesting, rearing and foraging.

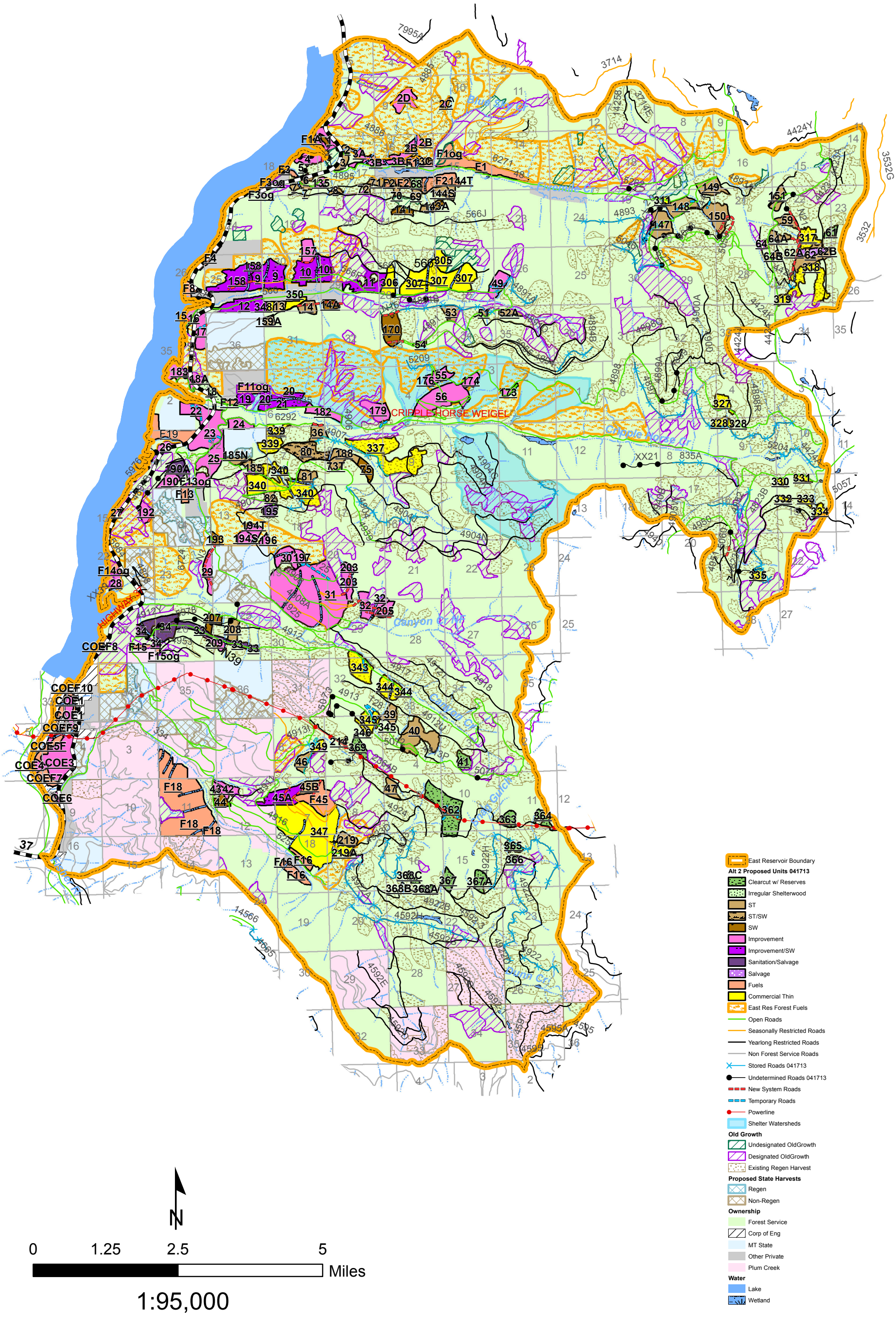
UNIT #	HARVEST METHOD	TOTAL OPENING (acres)	BENEFITING RESOURCE
362	Clearcut	192	Reduce fuels and provide a fuel break immediately adjacent to a major power transmission line. By locating the units adjacent to past treatments they will be more effective at disrupting large fire growth and be more conducive to fire control actions.

The Forest Plan states, "If it is determined during project design that the best way to meet the goals of the Forest Plan conflicts with a Forest Plan standard, the Forest Supervisor may approve an exception to that standard for the project"

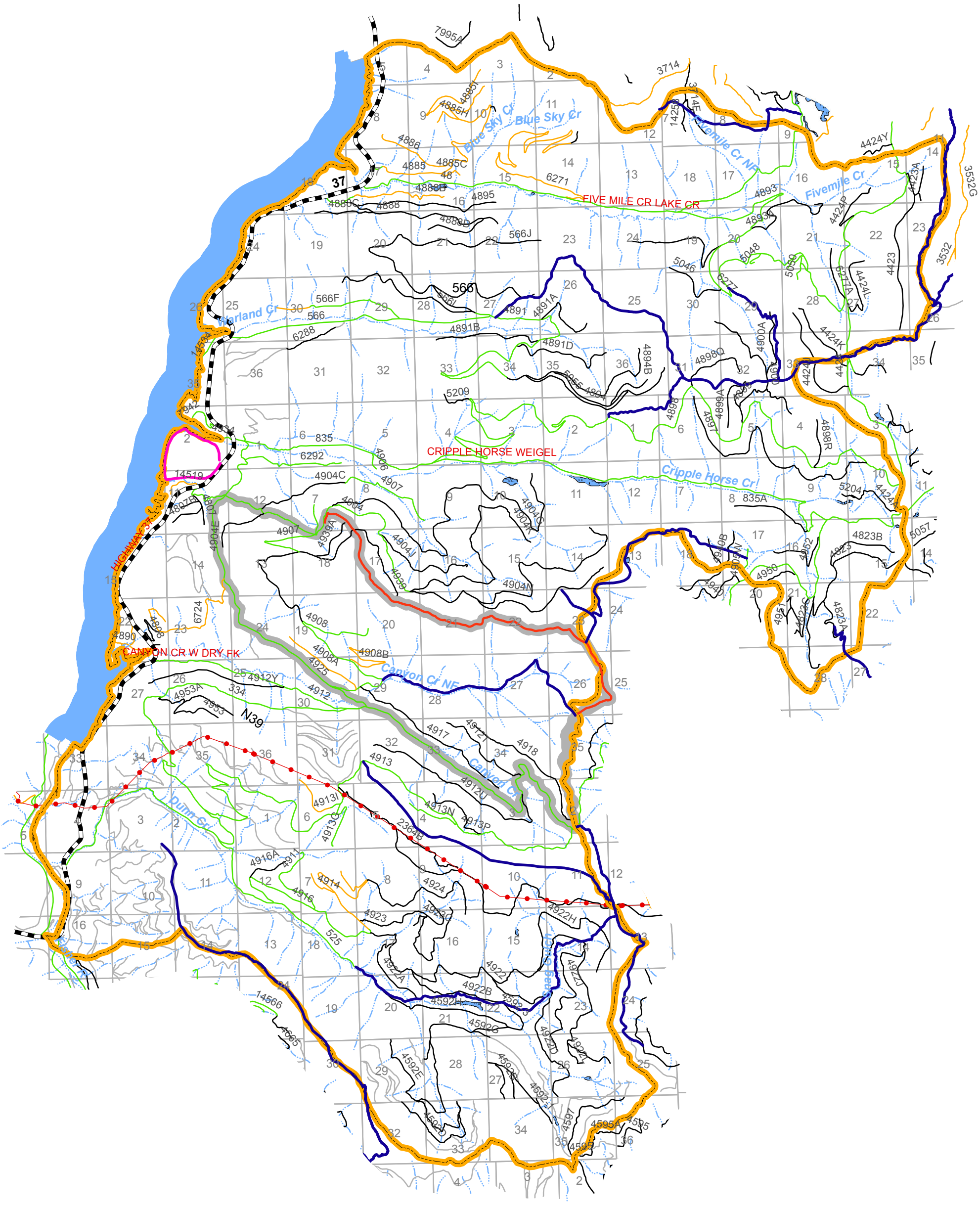
This project-specific amendment allows achievement of the overall Forest Plan goal for MA12 which is to maintain or enhance nonwinter big-game habitat and produce a programmed yield of timber (FP, Vol. 1, pg. III-48).

Project-specific amendments must comply with the National Environmental policy Act procedures. Compliance with these procedures and rationale for this project-specific amendment is contained in the East Reservoir Project DEIS, FEIS and draft ROD.

East Reservoir Project
Alternative 2 with Modifications
Map 1- Proposed Units



East Reservoir Project
Alternative 2 with Modifications
Map 2 - Trails



East Reservoir Project
Alternative 2 with Modifications
Map 3 - Proposed Road Changes